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ASSOCIATION**

1958 Annual Meeting, Civic Auditorium, San Francisco, Calif. • May 12-16, 1958

Clinical excerpts

Use of meprobamate in chronic psychiatric patients

No. 4 of a series

In the treatment of 300 "less promising cases," Miltown produced complete remission of symptoms in 3%, striking improvement in 35%, some improvement in an additional 46%, and no change in 16%.*

*REFERENCE: Pennington, V. M.: Use of Miltown (meprobamate) with psychotic patients. Am. J. Psychiat. 114:257, Sept. 1957.

HOSPITALIZED PATIENTS

DIAGNOSIS	NO. OF PATIENTS	COMPLETE REMISSION	GREATLY IMPROVED	GREATLY IMPROVED OR REMISSION	some improvement	NO CHANGE
Schizophrenia	210	6	53	36%	99	37
Hysteria	10	0	6	60%	—	—
Organic disorders	10	0	16	40%	—	—
Involutional, senile, and manic-depressive psychoses	13	2	5	41%	3	3
Anxiety and psychophysiological reactions, personality disorders	15	1	8	60%	6	—
TOTALS	300	9	104	35%	138	49

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No. 10

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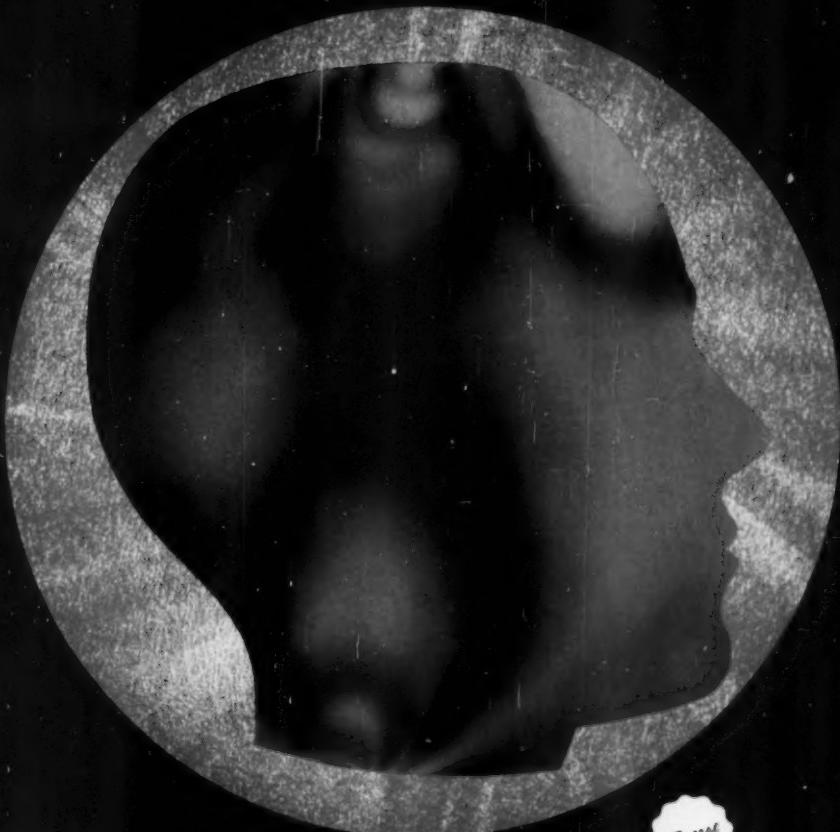
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accelerates reaction time, improves concentration, and facilitates communication
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by 5 years
of
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Similar results and freedom from mental clouding were obtained in an 18-month study by Ellermann⁴ in 24 patients suffering from "internal unrest, restlessness, irritability and hypersensitivity towards noise." All had rejected previous therapy because of hypnotic effects or ineffectiveness.

Turvey¹⁰ obtained very good or good response to "SUVREN" therapy in 73 per cent of 70 patients, as judged by the patients' job performance, social relations and absence of impulsiveness and purposeless motor activity.

In E.C.I.—emotionally conditioned illnesses

In 98 patients complaining of impaired ability to work, because of inner unrest, irritability, agitation, and gastrointestinal irregularities, von der Heydt⁵ reported that "SUVREN" provided the stabilizing influence needed to restore effective thinking and working capacity without fatigue or insomnia.

Kast and Loesch⁶ subjected "SUVREN" to a severe controlled test in patients exhibiting anxiety neurosis with various somatic manifestations. The physician's attitude toward "SUVREN" was a factor in the measurement of effectiveness. In patients receiving "SUVREN" with a highly negative physician attitude, 50 per cent responded favorably; on the other hand, with a positive physician attitude, 95 per cent of "SUVREN"-treated patients responded favorably. This contrasted strikingly with a 65 per cent response in the control group receiving a placebo with positive physician support.

In hyperactivity in children with brain damage Low and Myers⁷ reported on treatment of 40 children with cerebral damage. "SUVREN" therapy resulted in "a striking improvement in their behavior, they could be more easily controlled, and their attention span was prolonged." These patients had not responded well to barbiturates, chlorpromazine, rauwolfia compounds, or meprobamate. Absence of hypnotic or other side effects was noteworthy. In some cases treatment was continued for months without development of drug tolerance or refractoriness.

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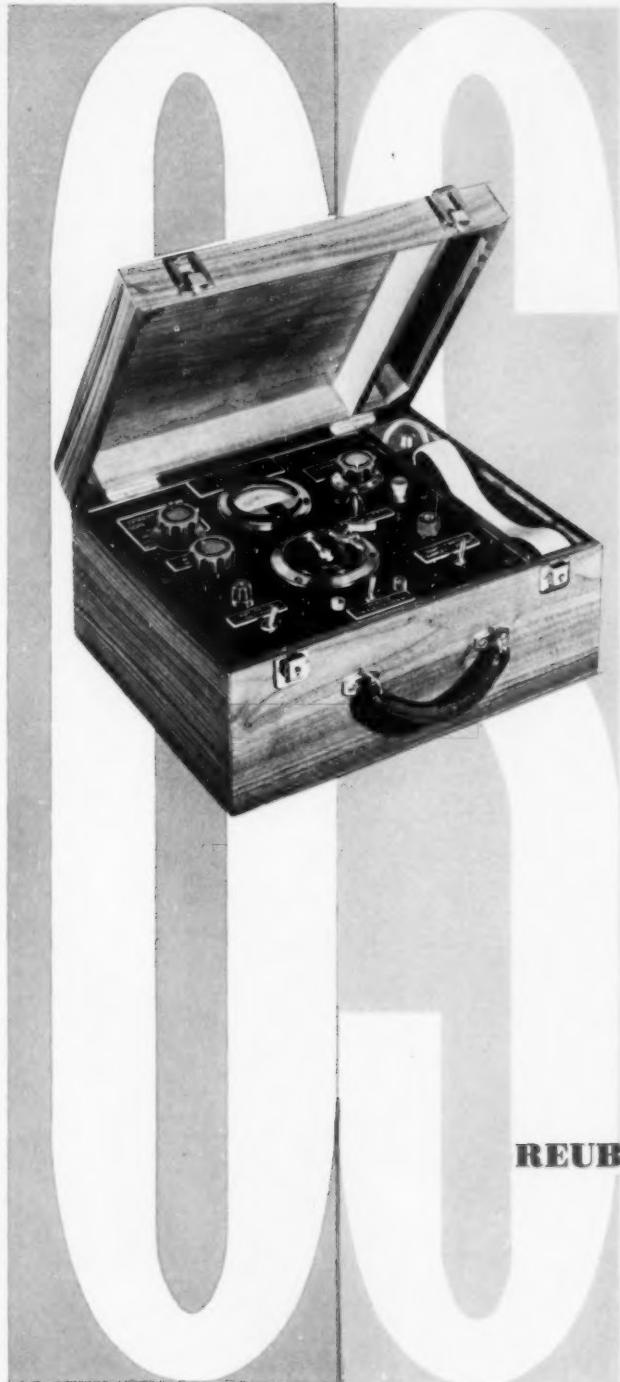
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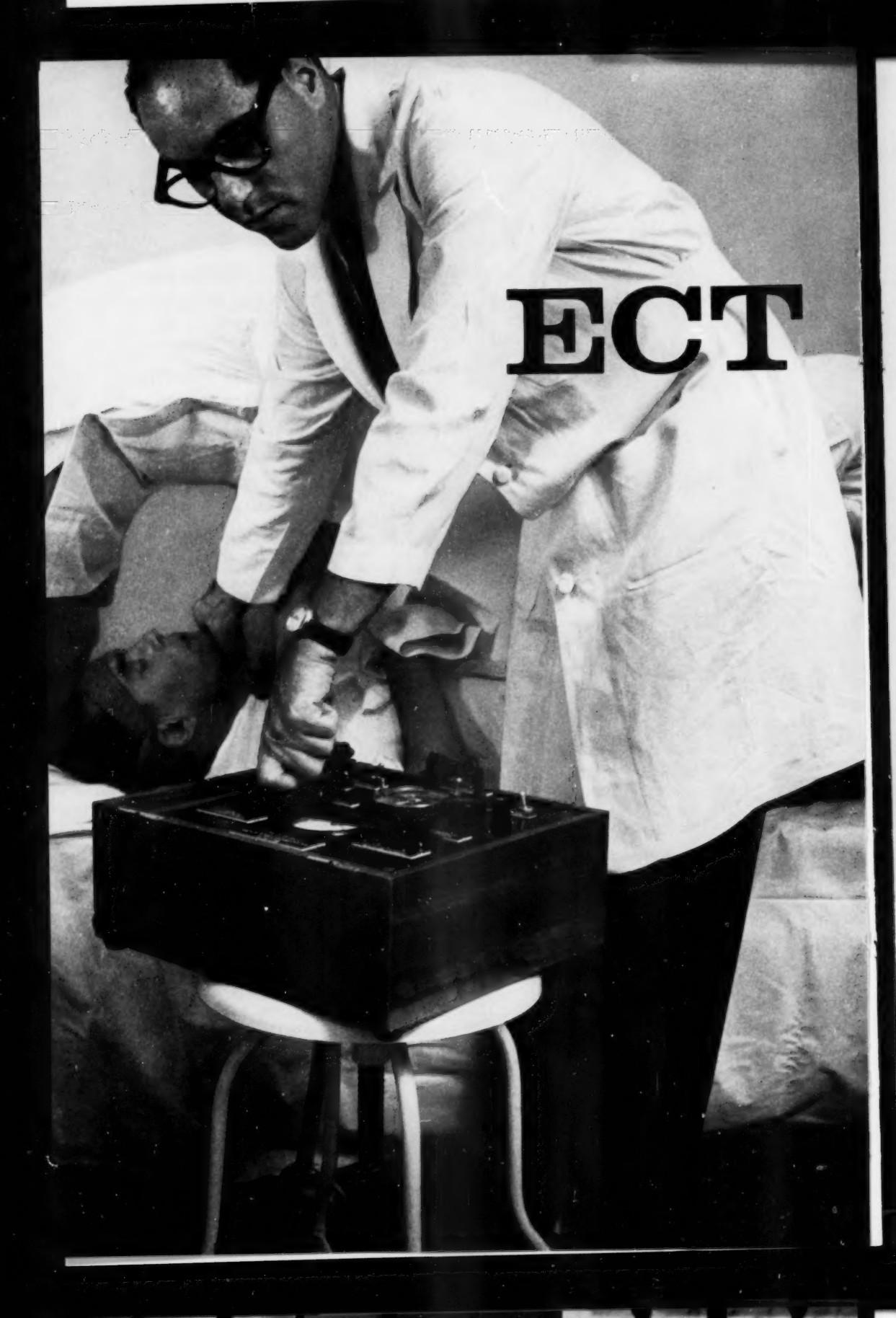
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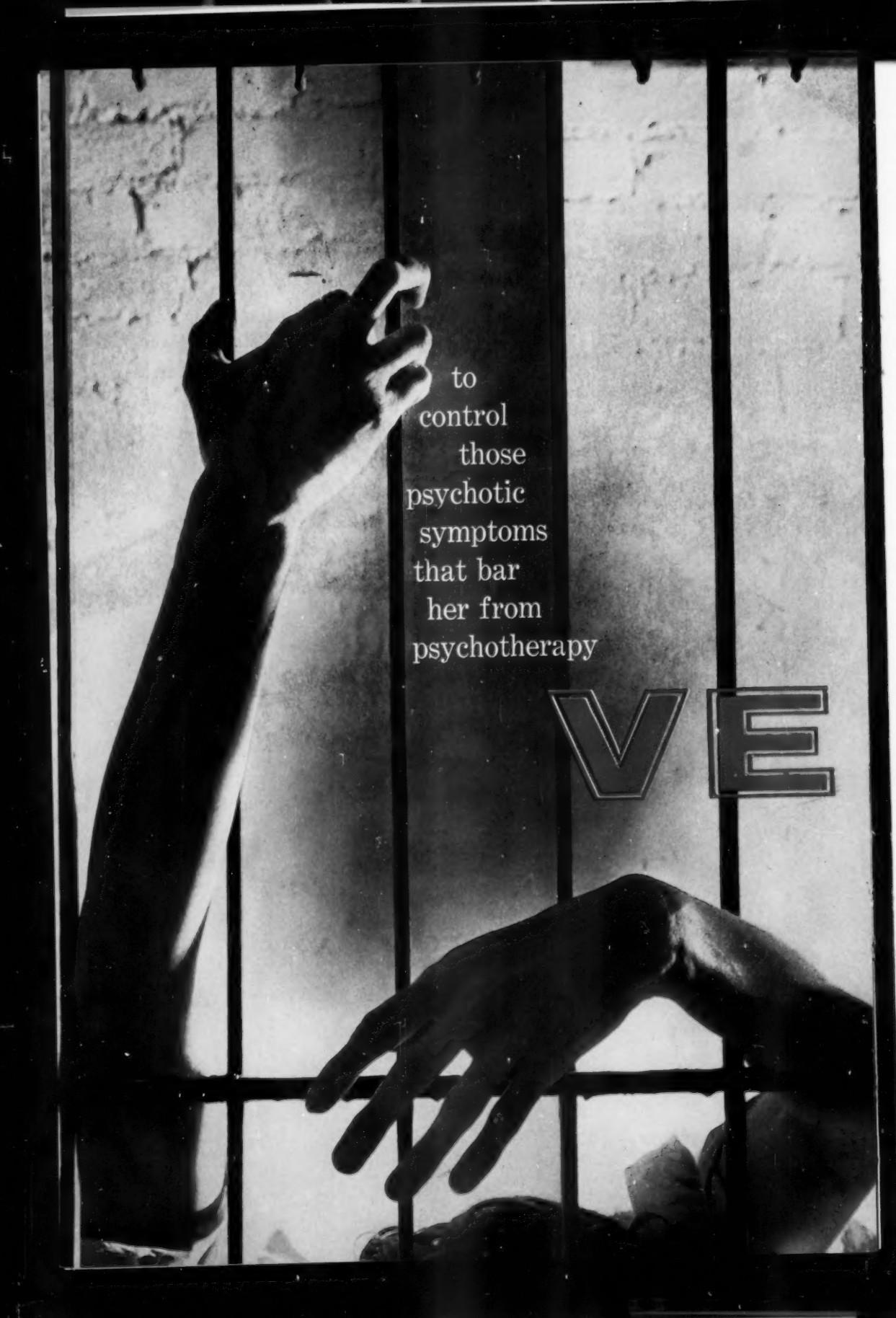
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MULTIDISCIPLINARY RESEARCH IN SCHIZOPHRENIA¹WILLIAM MALAMUD, M.D.,² AND WINFRED OVERHOLSER, M.D.³

During the last 25 years we have witnessed a most remarkable increase in research work in schizophrenia. A vast number of publications has accumulated and Manfred Bleuler(1), in his broadly conceived and comprehensively documented review of the literature relevant to this subject for 1941 to 1950, lists 1,100 articles, although he states that he has only covered part of the field. To this we could add what is probably an even greater number for the period following 1950. These publications cover almost every conceivable aspect of research relevant to these problems, basic as well as applied; original investigations and evaluations of research previously done; experimental laboratory work and clinical studies. They deal with the whole spectrum of sciences within the field of human and animal behavior, all the way from genetics to anthropology, including practically all the biological, mental and social sciences. Many of them originated and were carried out within the psychiatric profession itself, but there was also a considerable influx of investigations from a number of allied disciplines. It is quite obvious that this increased activity during recent years was motivated by and received its impetus from a number of factors which resulted from changes in concepts and methods of approach that started early in the first decade of the present century at about the halfway mark in the one hundred years that have transpired since this clinical syndrome was first introduced by Morell in 1856.

From a practical point of view we have to consider, as one of these factors, the pressure of an alarmingly rapid increase in the number of patients. Since methods of successful treatment of these diseases were

almost nonexistent in the early days of this century and the majority of patients admitted were young and remained in the hospitals for long periods, the obvious result was the accumulation of a tremendous backlog of patients. Even at the present time, at least in this country, more than half of the very large number of patients cared for in mental hospitals are schizophrenics. Added to this and considerably augmenting the number of patients was the fact that with Bleuler's concept of a "group" of schizophrenias rather than a single syndrome, the variety of conditions falling into this category has increased to vast proportions not only in terms of patients actually admitted to mental hospitals, but many persons outside the hospitals who manifested the characteristics of these diseases. It is obvious that with the load continually increasing, the need for further knowledge also became more imperative.

The scope of investigative work was further broadened by the increased insight into the psychopathology and manner of development of these diseases, which made it quite apparent that a great variety of etiologic factors were involved. Bleuler's(2) emphasis on the importance of considering physiogenic as well as psychogenic factors, social stresses as well as intrapersonal conflicts, constitutional determinants as well as experiences during the lifetime of the individual, made it necessary to look for the solution of these problems in a number of what were hitherto considered either only peripheral or incidental conditions. The probability of the involvement of chemical processes, genetic factors, endocrine and metabolic causes on the one hand, and social, psychological and cultural factors on the other, while it rendered the whole problem more complex and progressively more difficult to grasp, also brought in more potentialities in terms of avenues of approach and techniques that could be applied. It also became obvious that in this search it was essential to concentrate on the basic sciences

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² Medical Research Director, Scottish Rite Research Committee, and Professor of Psychiatry, Boston University School of Medicine.

³ Chairman, Scottish Rite Research Committee, and Professor of Psychiatry, George Washington University School of Medicine.

if we were to get down to the fundamentals of the disease rather than to deal with superficial precipitating factors.

Finally, and what was, undoubtedly, the most important factor in producing the main impetus and motivation in this research work, was the introduction of the concept of *dynamics* into the study of the nature and the pathogenesis of personality disturbances. Of the number of contributions that were responsible for its emergence in the study of schizophrenia, that of Eugen Bleuler(3) is most fundamental and is symbolized by the very designation that he proposed as a substitute for the previously accepted "dementia praecox." Inherent in the new term, schizophrenia, was not only a more adequate appreciation of the psychopathological phenomena, but the very use of the word "schizein"—a verb implying an on-going, active process rather than the inevitable and static destiny of hereditary degeneration—brought with it the implication of dynamics, both in the development and in the course of the disease with changes through time as the individual adjusts himself not only to environmental conditions, but to the disease itself. The extent of the impact that the introduction of this concept has had on research in psychiatry, as in medicine in general, can only be fully realized when we take into consideration the variety of components that are implicit in the term *dynamics*, the most important of which are as follows:

1. The dynamics of *active participation* in the development of the clinical picture by both the noxious agents and the organism which is affected by them. This concept as it was, for instance, expressed in general medicine by Ludolph Krehl, implies that the complex of symptoms in a disease syndrome at any given time must be regarded as occurring in an organism which is both *object* and *subject* of the disease. Inasmuch as he suffers injury produced by the noxious agents, the patient is object of the disease and the symptoms and signs presented can be regarded as the result of that injury, but as soon as the organism is affected in this manner it begins to adjust itself to the injury and to participate actively in the development of the symptoms by the marshalling

of defense mechanisms and reaction formations in the process of adaptation.

To that extent, the ailing organism is *subject* of the disease. Thus it is, then, that from the very inception of the illness both of these factors are intimately interwoven in determining the presenting clinical picture at any given time. Bleuler, in introducing his concept of primary and accessory symptoms in schizophrenia, has pointed out the importance of taking these two factors into consideration in an attempt to understand the manner of its development.

2. The dynamics of *time*. Freud's(4) emphasis on the importance of the effects of stressful experiences as they occur during the formative stages of life and the essential role that is played by instinctive forces throughout the growth and maturation of the organism, has brought to our attention the importance of considering the organism not only in terms of the conditions that we see at any given time on the surface, but of the background and the continuous interaction of person and environment throughout its development in producing changes in adjustment and molding the total personality. It is of interest to note that this introduction of the importance of the time factor in the understanding of human nature both in health and in disease, came at about the same time as Einstein pointed out the importance of time in the physical world and Pavlov in the organization of physiological functions.

3. The dynamics of *homeostasis*. This involves a continuum of processes that are at work in the adjustment of the organism to both its internal and external milieu, in the sense that disturbances in balance continually tend towards the establishment of equilibrium and it, in turn, contains the ingredients of disturbing that balance in the process of growth and maturation. In this sense, then, the functions of the organism must always be regarded as a continually changing, fluid process and as long as it is alive it never remains in a state of rest.

4. The dynamics of *relationships* of parts within a whole organism. This concept, first referred to by Plato in pointing out the fact that in the treatment of illness we must take into consideration the function of the

organism as a whole ("olon") as well as the disturbances in any specific part ("meros"), found its application to the study of human behavior more recently in the contributions of gestalt psychology, and, specifically in psychiatry, in Meyer's emphasis on the psychobiological unity of the organism as opposed to a mere juxtaposition of parts such as, for instance, the artificial separation of "organic" and "mental" phenomena. It is this concept that has played an important role in the development of the psychosomatic point of view which, far from being limited in its scope to a few specific syndromes, must actually be looked upon as an important characteristic in all diseases including the group of schizophrenias(5).

The introduction of these concepts has had a profound effect upon the various phases of work in psychiatry, but particularly in the field of research. The change of attitude specifically towards schizophrenia, regarding it as a dynamic process both in its pathogenesis and the course of its development, has provided the stimulus for systematic research with the ultimate goal of developing programs of prevention and treatment. At the same time, it has also served to widen the scope of this work with an emphasis on multiple causality rather than a single etiologic factor. In keeping with this, there has been a progressive trend towards bringing into this field a number of allied basic sciences relevant to human behavior. In the course of time this has opened potentialities for research in a wide range of specialized disciplines, from anthropology and sociology at the one end and biochemistry and genetics at the other. The progress that has taken place in these sciences during the first two or three decades of this century has provided us with a great variety of new methods and techniques, but it has also brought up the need for establishing appropriate methods of communication for the purpose of coordination. It was to be expected that with the progress made in each specific science, the lines of communication tended to become more and more strained to a point where specialists in each one of them actually found it difficult not only to work in unison but even to understand each other's terminology, or to appreci-

ate the implications that are involved. This problem became particularly intensified in the shadowland between the biological sciences on the one hand and the mental and social sciences on the other. It became obvious, therefore, that in order to pursue this work successfully, particularly in the field of basic research, one had to emphasize a multidisciplinary approach in which all of the relevant sciences were included and coordinated through proper means of communication, so that they would make sense ultimately in their application to practical needs.

A good example of the possibility of dealing successfully with both of these needs is represented in the program that for almost a quarter of a century has been conducted on the North American continent under the sponsorship of the Scottish Rite Supreme Council of the Northern Masonic Jurisdiction, 33°, U. S. A., in cooperation with the National Mental Health Association, and we should like to present here a brief description of this program. It was organized in 1933 by the Supreme Council through the inspiration and wise leadership of the past Sovereign Grand Commander, Dr. Melvin M. Johnson(6). Its purpose was to sponsor a variety of research projects in the field of the basic sciences, with the ultimate goal of gaining knowledge concerning the variety of factors that are at work in the causation of schizophrenia, the understanding of the manner in which these factors combine to produce the disease and influence its course and the development eventually of programs of prevention and treatment. Two significant features of this program should be particularly emphasized: a. It was the *first* organized and concerted plan for multidisciplinary basic research in the field of schizophrenia, and b., it was developed by a humanitarian organization aided by sound medical advice, with the aim of attacking one of mankind's greatest scourges and thus aiding in the cause of human welfare. The emphasis from the very beginning was on patient and systematic investigation into a variety of the basic sciences rather than an attempt to search for quick therapeutic results. Since its inception and until the present day, some 80 projects have been sponsored over the years, the selection and

supervision of these projects being under the direction of a committee representing specialists in the various lines of approach to these problems; at the same time, however, permitting a wide latitude of freedom for the research workers to pursue the particular methods of investigation and objects of inquiry as they saw fit. In order to facilitate communication between the research workers in these widely varying subjects, periodic meetings of the chief investigators have been held at which they presented their material with a view towards adequate communication and in order to keep the main goal in mind.

The program, which was first conceived and set in motion by Dr. Johnson and for a number of years kept in progress by him, was, within the last few years, taken over by his successor, the present Sovereign Grand Commander, Honorable George E. Bushnell(7), whose unbounded enthusiasm and energy have made it possible to increase the scope both of the financial support and the variety of subjects included in this program, and at the same time, with the aid of the committee under the chairmanship of Dr. Arthur H. Ruggles originally and Dr. Winfred Overholser since 1953 and consisting of both professional and lay members (the latter representing the Supreme Council), making it possible to extend the field of investigation while maintaining the aspect of coordination and appropriate communications between the different projects. Currently, 29 such projects are being sponsored by this committee, representing a wide variety of sciences such as genetics, biochemistry, endocrinology, physiology, anatomy, child growth and development, pharmacodynamics, psychopathology, psychology, sociology, and others. The establishment of adequate communication between the workers in the various sciences has succeeded not only in keeping each one of them aware of the results and implications of their fellow workers, but also in the development of closer lines of integration and of combined attacks on these problems by representatives of two or more disciplines. It would be impossible within the limits of this report, to present a comprehensive statement of each one of the projects

that are being sponsored. A few examples, however, may suffice to indicate the trend not only of this particular program but of similar ones that are being developed at the present time throughout the world.

STUDIES IN GENETICS

For a number of years, our committee has been sponsoring the work of Dr. Franz J. Kallmann(8) in the search for a clarification of the important role of constitutional factors in the pathogenesis of these diseases. Basing his work on the results of a number of investigators who have preceded him, and who have utilized as their material primarily the study of the family background of patients suffering from schizophrenia, but realizing the various sources of error that are inherent in such an approach towards the study of genetics, he concentrated most of his efforts on the study of identical twins as compared with non-identical twins and non-twin siblings. The results of Kallmann's studies are well known throughout the world and need no further elaboration, other than to state that he has succeeded in demonstrating that when one of a pair of identical twins develops schizophrenia, the probability of the occurrence of similar maladjustment in the other twin is some 5 to 6 times as great as it would be in non-identical twins or non-twin siblings. This certainly indicates that there is a constitutional vulnerability which is of great importance in the development of these diseases. To what extent this is entirely hereditary or how much of an additional influence occurs in intra-uterine life may have as determining factors, is not as yet clearly established and must await further investigation. We are also faced with the question of the nature of this vulnerability or what particular functions of the organism it affects. Is it, for instance, a matter of a greater sensitivity and weakness in the organization of any one of the organs of the endocrine system? Is it a matter of disturbance in the autonomic nervous system and its related endocrine functions? Is it a pathological disturbance, quantitative or qualitative or both, in the biochemical—particularly enzyme—func-

tions of the organism? Does it affect the distribution of certain vitally important chemical substances in the nervous system? Or, finally, is it a combination or interaction of several or all of these? Actually, his most recent work(9), especially in the study of pre-adolescent forms of schizophrenia, has concerned itself with the quantitative excretion patterns of a salivary enzyme which acts on red cells by causing exposure to T antigen on the cellular surface. His findings indicate a definite relationship between high receptor-destroying enzyme (RDE) test scores and certain basic constitutional characteristics of families, ascertained through an early case of schizophrenia. It seems plausible to work on the hypothesis that this may be one of the biological bases of the observed family characteristics, and Kallmann is in the process of developing methods for the determination of this reaction, using them in a number of patients suffering from this disease, and in their families. This demonstrates the importance of combining biochemical studies with the work on genetics for the purpose of ascertaining not only the presence of a constitutional factor but also its nature. Another aspect of this study of genetics concerns itself with the importance of investigating the particular conditions under which a vulnerability of this type may then be enhanced by postnatal environmental factors leading to the development of the disease. For this purpose it is essential to study the early environment in infancy and childhood; in other words, to carry on simultaneous studies of child growth and development as observed in normal children and those who eventually may develop the disease.

CHILD GROWTH AND DEVELOPMENT

The workers in this area have been particularly interested in finding the answer to the question of what is the nature of those stress situations that are particularly likely to interact with the constitutional predisposition in providing the basis upon which the disease develops. It is obvious that this can only be done most effectively in the early stages of life beginning with the very first moments of the relationship of the parents,

particularly the mother, to the child, of its relationship to them, the siblings, and the social setting in general. The workers in this field have come to appreciate the fact that it is important to study not only the developing child itself from birth on, but also the conditions that existed before birth, the attitude of the parents, particularly the mother, to the coming child, various problems in the adjustment of the parents themselves, and to gather these data in an objective manner which will not be distorted by possible screen memories and subjective colorings as they come into play in retrospective accounts. A number of our workers are engaged in this study, and in some instances they start their observations with the first months when the expectant mother comes for prenatal examination and advice, namely, about the third month of pregnancy. This is followed by a combination of a study of the mother and her environment during the subsequent course of pregnancy and delivery, and then continues the study of the child as it develops from the first moment of birth on through infancy, childhood, and adolescence. A number of factors have already been shown to be of importance in this regard, as has been demonstrated by the findings of Washburn and Benjamin(10); Putnam, Rank and Kaplan(11); Leo Kanner(12) and his co-workers; William Line(13) and a number of others. This type of a closely integrated program of research in genetics, biochemistry, and child growth and development with all its biological, psychological and social implications, demonstrates both the feasibility and the importance of carrying on co-ordinated research in which, on the one hand, we have the advantage of the contributions of each expert in his specific area of investigation and, on the other, their implications can be rendered more meaningful to real life settings, as their results are supplemented by those of related disciplines.

BIOLOGICAL STUDIES

The progress that has been made in recent years in this area by research in physiology and biochemistry offers a particularly impressive demonstration of the value of

coordinated studies. The basic contributions of scientists like Sherrington, Cannon, Pavlov and others, have provided the foundation for a new trend, shifting the emphasis from static neuropathology to a dynamic orientation and from the preoccupation with specific psychophysical relations of single organs and functions to a more comprehensive study of the organism as a whole, emphasizing the process of integration within the person in his adjustment to life situations. The comprehensive investigations that have been undertaken the last few years in the functions of the endocrine system present a particularly good example of these potentialities. The possible implication of disturbances in the functions of these glands in the adjustment of the organism to life situations has already been indicated in relation to genetics. In the last few years a considerable amount of knowledge has been gathered in regard to the role played by the hypophyseal-adrenocortical system in normal and pathological reactions to stress. Pincus and Hoagland (14), Hemphill and Reis (15), and a number of others (16) have reported that the psychological withdrawal of the schizophrenic patient from active competition and his retirement into an autistic world, are reflected in increasing interference with the function of this system. Similar findings have been reported by Angyal, Freeman and Hoskins (17), in regard to the function of the thyroid, and Funkenstein (18) and others, in the adrenal medulla and autonomic nervous system function. It is true that at the present time we are not in a position to state whether these functions represent primary causative factors or are the effects of disturbances initiated elsewhere. Whichever the case may be, however, once they have been established they begin to participate in the disease process, and a better understanding of the deficiencies involved may make it possible to devise methods of compensating for them and thus prevent further progress of the pathologic process.

Another highly promising lead has been opened by research in certain phases of pharmacodynamics. The introduction of experiments with such substances as lysergic acid, the effects of which are so closely related to

the symptoms observed in schizophrenia, has provided the means of facilitating objective experimental observations in these conditions. Here we find a number of highly promising leads. One of these is found in the work of Hoffer, Smythies, and Osmond (19), which points to the fact that certain metabolites of adrenalin, particularly as they may be found in personality disturbances, are closely related both in their biochemical structure and psychological effects to those of some of the hallucinogenic drugs. Another lead has been furnished by studies of serotonin and the significant fact that this substance, which is found in such large concentrations in the central nervous system, is characteristically antagonistic to lysergic acid and some of the other hallucinogenic drugs. Of further interest in this regard are the vasoconstrictor characteristics of serotonin, and the fact that hypotensive agents such as Serpasil, have recently received so much attention as therapeutic agents in certain personality disturbances.

A variety of other phases in this field have been subjected to study. Philip Bard's (20) work on the effects of ablations of the area of the amygdala in relationship to emotional control, taken in conjunction with the various investigations of the effects of lobotomies, points toward another possibility of coordinating neuro-anatomical and physiological studies and their psychopathological correlates. Finally, the work of Funkenstein (18) on the study of reactions of different types of personalities to stress situations and their relationship to the epinephrin/nor epinephrin ratio further accentuates the concept of dynamic integration between physiological and psychological functions. His observations on the manner of the reaction of different types of persons to stress situations, both in emergencies and the continuous mastery of stress, and in the reaction of the individual to such settings whether directed outwards as anger and possible projection, or depression and introjection, form a link between interferences as observed in studies of physiological functions and their correlates in terms of psychopathological symptom formations. It is particularly interesting to note his studies of the relationships of disturbances of this type as they

are reflected in interferences with thought structure in general and abstract thinking in particular.

PSYCHOLOGICAL AND SOCIOLOGICAL STUDIES

The important role of these areas in our program has already been referred to in the discussion of the close relationship between the biochemical studies and disturbances in the psychological functions of the individual, as well as the importance of taking into consideration occurrences in the early stages of child development as they combine with constitutional factors in leading towards the development of the disease. The effects of faulty child-parent relationship in setting the stage for the development of the disease have been particularly pointed out in a number of studies, such as those of Rank and Kaplan(11), Kaufman and Gardner(21), and others. The frequently observed occurrence of a pathological combination of cold detachment and symbiotic fusion in the mothers of children who develop early manifestations of schizophrenia may well be regarded as playing an important role in the development of ambivalence in the schizophrenic patient. At the same time, the frequently repeated traumatic experiences in such children may also serve as noxious influences in the basic physiological mechanisms of adaptation to stress situations.

The observations of Kaufman and Gardner on the studies of pre-adolescent forms of schizophrenia also indicate the possibility of the effects of conflict situations in the parents as they find their expression in the symptoms observed in the child. Of further importance in this regard are the results of the psychological studies of Piotrowski, on the manner in which energy control is dealt with in the early stages of schizophrenia, as indicated by Rorschach studies. The ratio of available energy contributed by instinctive needs and the control of this energy by the ego, appears to be of great significance in indicating the subsequent course of the disease and its prognosis in psychotherapeutic procedures. At the same time, we find important indications in regard to the nature of the schizophrenic process through the study of the manner in which patients suffering from this disease react to specific

methods of psychotherapy, as has been pointed out by Whitehorn and Betz(22). Finally, we have the gradually accumulating data in regard to the importance of the social setting in which this disease appears to thrive, as has been pointed out by Redlich and his group, the significance of the effects of urban versus rural settings, and the close relationship that exists between anthropological studies of various cultures, as has been shown by the work of Mead and Bateson, William Line in his cross-cultural research, and a number of others.

The results of all of these studies against the background of the concepts that were discussed in the introduction permit at the present time of the development of a general framework of the schizophrenic process, and which can be formulated somewhat as follows: the variety of pathological manifestations as they are observed in the clinical picture of the group of schizophrenias, develop most readily in persons who are constitutionally endowed with a certain predisposition or vulnerability; this has been established on the basis of investigations in genetics. Studies of the developmental process of the individual, particularly in early infancy and childhood, have shown that persons endowed with such vulnerability need not invariably develop this disease but are more likely to become victims of it because of this predisposition, provided that they are exposed to certain traumatic experiences, psychological, social, or physical, during infancy and childhood. This combination results in a series of changes in the growing organism which are expressed in terms of certain types of behavior anomalies, particularly in regard to interpersonal relationships, and at the same time manifest themselves in certain defects in physiological functions. With this as a foundation, the individual is rendered unable to cope with the stress and strain of competitive life situations particularly at critical stages, such as puberty, adolescence, marriage and catastrophic events in mature life. When such stress conditions have to be met, the person is unable to adjust himself to them as adequately as his fellow human beings, and as a result he responds with one or both of two types of reactions. He withdraws to a

greater or lesser degree from the responsibility of dealing with these problems into a state of social, psychological, and physiological isolation both in regard to his internal and external milieu and begins to reconstruct his world on the basis of autism, with the development of projections, distortions, and defects in his physiological reactions to stress.

This point of view is presented merely as a general frame of reference which at the present time serves as a background for the program we have described and a number of others that are now in progress throughout the world. The relevance of the various projects within such a program to the ultimate achievement of our goal is obvious, and it is equally clear that as the scope of such research is broadening and becomes more complex, it will be very important to maintain proper lines of communication, so that while this work continues to be multidisciplinary, it will also be adequately coordinated.

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HISTORICAL LANDMARKS IN RESEARCH ON SCHIZOPHRENIA IN THE UNITED STATES

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The Committee on History of The American Psychiatric Association has been privileged to prepare an exhibit designed to show excerpts from the United States literature on research in schizophrenia for display at the Second International Congress of Psychiatry convened in Zurich, Switzerland, in September 1957. This paper is a summary of this project and has been prepared in collaboration with the various members of the committee.²

The purpose of this study is to report a sampling from the extensive literature on this subject that has developed in the United States during the past 191 years indicating something of the nature and scope of the work. It is intended to offer a survey of the greatest possible variety of topics that have been included by various workers in the United States rather than to present different approaches or schools of thought as they may have influenced clinical understanding and treatment in psychiatry.

From a review of over 3,000 reported studies, examples are described which have reflected research interest and data grouped in accordance with 5 principal categories as follows:

1. Theoretical and clinical concepts.
2. Experimental and biological studies.
3. Epidemiological, statistical and genetic studies.
4. Therapeutic investigations of (a) somatic, (b) psychotherapeutic, and (c) social techniques.
5. Interdisciplinary research.

The references cited have also included those believed to have originated in the United States, as well as those which represented first publications on experiences in

the United States concerning therapeutic techniques developed in Europe, or publications on clinical, social and statistical aspects of schizophrenia considered to be characteristic of certain conditions in the United States. In general, the present summary may serve to indicate primarily what has been done and the methods employed.

During the earliest years of historical development in the United States, most of the prevailing psychiatric thought or medical concern about emotional illness reflected the ideas then current in Europe. Prior to the year 1850 the terms "schizophrenia" and "dementia precox" were not in use. No carefully formulated research programs were recorded until late in the 19th century; but in 1812, Benjamin Rush published his well known treatise, *Medical Inquiries and Observations on the Diseases of the Mind*(1).

By 1890 psychiatry as a specialized branch of medicine had become sufficiently organized for the consideration of clinical findings to be reported at the regular meetings of the American Medico-Psychological Association, which had been established in 1844. Noting a regrettable lack of well organized research interests and activities, S. Weir Mitchell, as noted in *American Psychiatry 1844-1944*(2), in 1894, addressed the Association expressing criticism of the group of "lack of careful scientific report." Increased interest in this aspect of clinical work(3, 4) then became apparent, and in 1909 the National Committee on Mental Hygiene(2) had begun to have "a general stimulating effect in research." From 1903 until 1910(5, 6, 7) and for many years thereafter, Adolf Meyer(6, 7), working at the Worcester State Hospital, the Manhattan State Hospital, and subsequently at the Johns Hopkins Hospital, was a leading figure in early research in schizophrenia in the United States.

Early references(5) indicate that, "Meyer worked toward a more really dynamic-genetic interpretation of the psychoses and introduced the concepts of dementia precox there." Lewis(6), in referring to this early

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work stated further that, "published contributions from 1903-1905 and 1906 developed a conception of dementia precox as depending on a special personality and constitution and on habit disorganization, leaving the internal working and development of the function and structural deficit as possibly incidental and still to be worked out." This constitution-psychogenic scheme was further developed by Hoch(8, 9), Jelliffe(5) and others and tended to characterize much of the American work in this field. In 1909 Hoch and Amsden(8) published observations on schizophrenic patients which have continued to influence the thinking of present day workers when they described traits which they considered demonstrated the "shut-in personality." Hoch also referred to a study of 100 cases by Kirby^a which he reported to the New York Academy of Medicine in 1910. Hoch and Amsden stressed the importance of the *detailed personality study*.

Concurrently with several of Meyer's contributions, E. E. Southard(10) in July of 1910 reported further on "A Study of Dementia Precox," in which he examined autopsy material for evidences of organic change which he found "not wholly convincing." He did, however, describe morbid alterations in the convolutions of the brain indicating a localization of several groups of symptoms. In addition, he offered 17 fairly concise "constitutional factors"(11) in dementia precox. In 1924 Dunlap(10a) reported no verifications of Southard's work and offered well controlled evidence to refute his conclusions, stating that his study did not show "even a suspicion of a consistent organic brain disease as a basis for the psychosis."

Studies having to do with *Theoretical and Clinical Concepts* began with the observations of Benjamin Rush(1) as noted above. Another early effort to stimulate sound research interest and methods was a presentation by Spitzka(12) in 1878 when he verbalized criticisms of preoccupations with non-medical activities by many of the superintendents of state hospitals and urged that efforts be directed "to exhibit the organic connection existing between psychiatry or

mental pathology and that branch of general pathology which relates to the nervous system." The beginning dynamic quality of research interest utilizing improved research techniques was presaged by Meyer(13) and Hoch(14) when, in 1903, he said "All these considerations will, I hope, make clear that the constitutional abnormalities which we have described, and which in their most marked form probably represent the direction in which the important traits lie, must be the expression of dynamic forces of great importance." This type of thinking was further developed by Jelliffe(15) in 1911.

In 1912 Bond(16) studied a series of 50 patients having dementia precox. (It is of interest to note that in this study the special "shut-in" personality was found in only 20% of the schizophrenic groups.)

In 1931 the Association for Research in Nervous and Mental Diseases devoted Volume X of their "Proceedings" to the subject of "Schizophrenia" and Strecker(17) reviewed a series of 25 patients initially studied several years before with reference to various prognostic opinions expressed at that time. He found that "chances of satisfaction by reality" could be considered as "a highly important prognostic factor." As part of the same symposium, Campbell(18) working with a prominent statistician reported on the percentages of cases considered to have "positive environmental stress as an etiological factor" in schizophrenic patients diagnosed during the years 1923 through 1926 at the Boston Psychopathic Hospital. A further study at that time by Bowman and Raymond(19) reported on 2,444 cases, of which 909 were schizophrenic, and a new method of coding personality traits was described. An evaluation of "maturity" in personality was made by Sullivan(20), in which 100 cases were studied over a period of 7 years demonstrating that patients suffering the illness through an acute onset appeared to show more "maturity" which was directly related to a favorable prognosis.

Several hundred cases were studied by Lewis(21) in 1923 based on findings in autopsy material with evidence of frequent "developmental and acquired peculiarities in the circulatory and glandular systems" which he considered to be "a characteristic constitu-

^a Not published.

tional finding in the catatonic and hebephrenic reactions."

The important concept of impairment of abstract thinking was discussed by Bolles and Goldstein(22) in 1938 after they had done extensive work utilizing psychological methods of investigation similar to those introduced by Vigotsky confirming and expanding the conclusions of the latter worker. Hanfmann and Kasanin(23) in 1942 reported similar investigations based on the use of the "concept formation test" as introduced by Ach and modified by Saharov using more strictly controlled conditions.

In 1944 attention was directed to symptoms in children by Kanner(24) who reported on a 6-year study of 20 children "whose behavior differed uniquely and markedly from anything reported so far." These behavior patterns were referred to as "early infantile autism." In 1953 Bender(25) referred to work with children by Potter, Meyer, Kanner, Despert, Mahler and others in her report on 18 years of clinical and research experience relating to 626 children who had been diagnosed as schizophrenic from ages 2 to 14. She stated ". . . we find that the schizophrenic infant retains all of the embryological features which have been outlined for the fetal infant by Gesell" and that ". . . anxiety is these children's first response and may be unremitting from the first day of life, or . . . appear at any time later." In this study, diagnostic criteria were outlined together with indications for adequate follow-up studies.

Experimental and Biological Studies have also covered a wide range of investigative approaches. For example, in 1925 Bowman(26) reported a detailed study of 24 patients by means of various laboratory tests having special relationships to endocrine functions. He was led to the conclusion that "the results are not consistent with the constant presence of any definite endocrine disorder and do not suggest that a simple glandular dysfunction is an etiological factor in schizophrenia; (rather) it may arise on a number of different bases." Hoskins and Sleeper(27) did an extensive study in 1929 at the Worcester State Hospital in which they studied 80 cases by means of carefully controlled research techniques indicating that

while endocrine deficiency would be considered as playing a significant role in dementia precox, their findings led them to believe that this illness ". . . is a reaction trend . . . a disorder of multiple causation. . . ." Work begun in Holland in 1920 was subsequently continued in the United States from 1932 until 1945 by DeJong(28) on the significance of experimental catatonia using bulbocapnine, mescaline, and other medications. Further studies in *The Biology of Schizophrenia* were published by Hoskins(29) in 1946 covering intensive investigations over a period of 18 years. In this work findings pointed significantly to defects in normal "maturation" which occur for reasons not yet understood in certain individuals. Further work from the Worcester Foundation for Experimental Biology was reported in 1949 by Hoagland and Pincus(30) which was based on deficient "typical adrenal-cortex response to short, acute stress in psychotic men generally." The authors were unable to localize the point of origin in the block in the alarm reaction but evidence was apparent "that those hormonal mechanisms involving homeostatic adjustment are the ones that seem to be malfunctional." Observations on "cytological changes in nerve cells in dementia precox" were reported by Papez and Bateman(31) in 1949 in which "three stages of nerve cell disease were revealed." They considered their findings to be confirmatory of those by Winkleman and Book.

During the past few years much attention has been directed to the effects of newly developed chemical and pharmacological agents, notably the "tranquilizing" group of drugs. Feldman(32) in 1956 reported a comparative study of various ataractic drugs used with 1,238 patients, most of whom were chronic schizophrenics. In 1957 Heath(33) reported further attempts to determine the nature of the metabolic abnormalities in schizophrenia based on studies of an apparent alteration in adrenaline metabolism.

"Electroencephalographic Studies of 1,000 Schizophrenic Patients" were reported in 1956 by Colony and Willis(34). All patients in this group were males and the findings were considered as ". . . support for

the belief that schizophrenia is a functional disease of psychological origin."

Epidemiological, statistical and genetic studies have also been fairly numerous though less so than reports on treatment methods. An early study from the epidemiological viewpoint was that conducted by Pollock and Knowland (35) in 1921 when first admissions to civil state hospitals in New York State from 1915 until 1920 were examined. In 1933 Pollock, Malzberg and Fuller (36) carried out a detailed statistical study from which the conclusion was drawn that ". . . as previously indicated, this establishes a presumption in favor of heredity as a general factor in the causation of mental disease." In 1939 Malzberg (37) did a follow-up study on the important work done previously by him, surveying the outcome of insulin treatment with 1,000 patients in the New York state hospitals. In his first research, he indicated that 65.4% of the patients treated ". . . thus showed some degree of improvement after treatment with the insulin." In the 1939 study, he reinvestigated each patient one year after treatment was finished, and learned that a total of 49% were still "improved to some degree."

In an effort to provide a more uniform basis for statistical evaluation, Malamud and Render (38) reviewed the literature in which they found ". . . so few well systematized studies and so little agreement in the conclusions reached on the course and prognosis of this disease." Studying 309 patients over a period of 8 years (1929-36) a "standard diagnosis" was used.

This work included also a discussion of various well-defined factors to be used as the basis for further comparative studies by others.

In 1946 "The Genetic Theory of Schizophrenia; an Analysis of 691 Schizophrenic Twin Index Families" was prepared at the New York State Psychiatric Institute and Hospital by Kallman (39) in which the case histories of 1,382 twins were studied. The results therein reported included the two following summary statements: (a) "The predisposition to schizophrenia, that is, the ability to respond to certain stimuli with a schizophrenic type of reaction, depends on the presence of his specific genetic factor

which is probably recessive and autosomal; (b) the *genetic theory of schizophrenia* does not invalidate any psychological theories of a descriptive or analytical nature. It is equally compatible with the psychiatric concept that schizophrenia can be prevented as well as cured."

In 1954 Ripley and Wolf (40) presented a unique study in which 341 schizophrenic patients treated by the authors in a combat zone during warfare were followed up after periods varying from 5 to 8 years. The interesting finding in this study indicated that such reactions were not to be considered as "benign" nor different than in civilian life as had been supposed by other observers.

Further statistical studies relating to the effect of insulin treatment were done by West and others (41) who reported on 781 patients treated by this method from 1936 to 1951. It was noted in this study, however, that ". . . this restoration was not necessarily accompanied by a permanent correction of the factors that predisposed the patient to regress in schizophrenia." A comprehensive review of the effects of various therapeutic methods was reported in 1953 by Zubin (42) in which the need for more adequate means of standardizing statistical studies was further demonstrated.

From the standpoint of *therapeutic investigations*, the application of various *somatic methods* has received much attention. Among the first such studies was that by Ray (43) in 1854 when he spoke with conviction of his experience with the use of etherization in the treatment of mental illness as he cited his experience with about 250 treatments for 25 patients at the Butler Hospital.

In 1931 Bleckmann (44) reported on "The Use of Sodium Amytal in Catatonia," describing the effect of this treatment in 15 cases, concluding that this was a useful method for making patients more accessible to psychotherapy. It is believed that this technique had not previously been reported in any of the literature on schizophrenia. Further experience with this form of treatment was recorded by Lindemann (45) in 1932 who compared the effects of the drug on 30 patients with its effects on 6 normal persons.

The use of amphetamines in the treatment

of the psychoses is also thought to have originated in the United States and was reported on by Davidoff and Reifenstein(46) in 1949.

In addition to various studies mentioned above, a great number of research projects having to do with the use of convulsive therapy have been reported in the literature. Representative of such research have been projects by Bookhammer and Saxe(47) in 1939 in which 29 cases of schizophrenia and other psychotic reactions were treated by means of metrazol, a study by Bennett(48) on the use of curare in electroshock in 1941, and a report of electroshock used over a period of 10 years by Kalinowsky(49) reported in 1949.

The use of electronarcosis as a treatment method was reported in 1945 by Tietz, *et al.* (50) who treated a series of 47 patients with results indicating this form of treatment to be "definitely superior to electroshock" and "approximating those of insulin shock therapy."

Modifications of the original techniques in the use of insulin shock therapy were devised by Shurley and Bond(51) at the Institute of the Pennsylvania Hospital where rapid sensitization to the drug was achieved by giving relatively large doses of the drug after which the coma effect was maintained by a relatively small dosage. This method was considered to be safer and more adequately subject to control so that it came to be employed in various treatment centers including those of the United States Army. Improvement rates were reported as being from 37% to 48.8%.

From about 1935 attention was directed to the use of psychosurgery in accordance with various techniques so that by 1948 a substantial number of cases had been reported. Watts and Freeman(52) summarized their pioneer work in the United States with these techniques and in 1949 Freeman (53) reported further on follow-up studies. By this time it was apparent that "choice of patient, choice of operation and choice of family" were important factors in obtaining the most effective results from this type of therapy. In 1949, also, Pool, Heath and Weber(54) reported on the indications, techniques and post-operative management of lobectomy.

Psychotherapeutic approaches have been many and varied and no single review of this large section of American psychiatric literature would do justice either to the quantity or to the type of work done. An interesting early study done by LaMoure (55) in 1912 had to do with the "re-education of dementia precox cases and industrial training of the chronic cases." In 1917 Coriat(56) presented a consideration of the use of psychoanalytic insights in the treatment of the disease in which he reported his conviction that ". . . an attack of the fundamental characteristics of the disease has been possible only with the development of psychoanalysis."

In 1929 Brill(57) presented a comprehensive review of the various psychotherapeutic concepts as they applied to schizophrenic patients in an effort to add to the dynamic understanding of symptom formation. Further applications of analytic concepts in therapy were reported by Zilboorg(58) at the Bloomingdale Hospital (New York Hospital—Westchester Division) in 1931 and he presented one case in detail. He considered that "the analytical method in its classical form, preceded by a preliminary and rather long period of analysis of the 'reality principle,' mobilizes the masses of affective energies which otherwise remain shut-in and prevent a proper contact with reality."

In 1931, also, Sullivan(59) demonstrated various methods of eliciting socializing responses from patients followed by further efforts toward re-integrating personality on the basis of psychoanalytic procedures. In 1939 Fromm-Reichmann(60) reported her experience with schizophrenic patients whom she found to be "capable of developing workable relationships and transference reactions."

Following an extensive experience in military psychiatry during World War II, the use of various group psychotherapeutic techniques with schizophrenic patients appeared frequently in the literature. An example of such concepts is recorded by Abrahams(61) who worked intensively with 25 schizophrenic patients residing in a maximum security ward of the St. Elizabeth's Hospital in Washington, D. C. in 1948. In this group of severely compromised patients, he found

that his research "demonstrated that schizophrenic individuals can be led into psychotherapeutically effective relationships with each other in a group setting through the exercise of a special type of group leadership." In 1954, a study of the relationships existing between physicians and their schizophrenic patients was reported on by Whitehorn and Betz(62) at the Henry Phipps Psychiatric Clinic in Baltimore in which significant aspects of the therapist's attitude and approach were evaluated. In this series of 100 patients, it was noted that best improvements appeared to occur "when the physician, in his day by day tactics, makes use of active personal participation rather than the patterns of passive permissive, interpretation and instruction for practical care."

Much of the work in studying and treating *childhood schizophrenia* in the United States has been stimulated by Bender, Despert, Bradley and others. In 1955 Bender and Gurevitz(63), reported on various concepts reflecting their experiences over a period of 20 years in this field. Their experience had led them to think of schizophrenia in childhood as being ". . . a developmental lag at the embryological level of the biological processes from which subsequent behavior evolved by maturation, characterized by an embryonic plasticity in all functioning areas and leading to anxiety and secondarily to defense mechanisms."

The development of treatment methods for large numbers of patients has perhaps been more prominent in the United States than elsewhere and there has accumulated an extensive literature having to do with the *social management* of patients. Typical of research efforts in this vein have been those reported by Myerson(64) in 1939 which demonstrated ". . . an amplification and synthesis of well known methods of approach to treatment of chronic schizophrenia. The only claim to originality (here) lies in the general underlying theory and in the aggregation of forces used, this being the basis for the term 'total push.'" One specific objective was to prevent the "prison psychosis" type of hospital influence which tended to reinforce the disease tendencies, i.e., withdrawal. Emphasis on the effectiveness of

hospital milieu therapy was also reported by Cheney and Drewry in 1938(65) based on a follow-up study of 500 schizophrenic patients in a private hospital, at the Bloomingdale Hospital in 1938 and subsequently at the same hospital (New York Hospital—Westchester Division) by Wall and Hamilton(66). "Patient government; New Form of Group Therapy" summarized a 3-year experience by Hyde and Solomon(67) at the Boston Psychopathic Hospital in 1950.

A form of research in schizophrenia considered to have had its origin in the United States is that of multi-disciplinary research as a well organized endeavor. Representative of this method have been projects such as that by Hoskins and others(68) at the Worcester State Hospital in 1933 in which some 500,000 quantitative observations were made in accordance with careful statistical methods employing the use of laboratory, psychological and psychiatric "tools" of various types which were used in relation to one another. In 1953 Johnson(69) referred to the important research program sponsored by the Supreme Council of the Thirty-third and Last Degree of the Ancient, Accepted Scottish Rite of Free Masonry for the Northern Masonic Jurisdiction of the United States. He observed that researchers had not coordinated their work. Money was first authorized in 1934 and the first research was published by N. D. C. Lewis as *Research in Dementia Precox*(70). Lewis' appointment as the first field representative and coordinator of research was made in cooperation with the committee of what was then known as the National Committee for Mental Hygiene and a committee of the Supreme Council. Annual appropriations were provided and coordination has been by informal meetings with written reports annually by the Director of Research to the joint committees appointed by NAMH and the Supreme Council. To date about one million dollars has been provided and recently one million was set aside with additional gifts as the "Benevolent Foundation of the Supreme Council," including grants supporting an important survey of world literature by Bellack in 1947(70a).

In 1953 Greenblatt and Solomon(71) reported on a series of 116 cases studied by

means of the collaborative support of various governmental and philanthropic agencies done in reference to psychosurgical techniques for 500 chronically ill patients. Of this number, 116 cases were studied by means of various multi-disciplinary techniques. In 1954 Heath(72) reported on *Studies in Schizophrenia; a Multi-disciplinary Approach to Mind-brain Relationships* at Tulane University, Department of Psychiatry and Neurology. In this work, utilizing the disciplines of psychiatry, psychology, biochemistry, neurology, and neuro-surgery, evidence was presented indicating that "schizophrenia may be considered to be a disorder of the lower levels of integration . . . with impairment of the sub-cortical levels of the nervous system."

In 1955 Volume II of "*Medical Research—a Mid Century Survey*" published by the American Foundation(73) included an important review of the problem of schizophrenia and its treatment with emphasis on the inter-action of physiological, psychological and social factors. The United States Congressional Act of 1955, providing for a 3-year survey on all aspects of mental illness was cited and current efforts to close the gap between the psychological and the organic concepts of the disease were highlighted, together with current objectives, including plans for more extensive studies of normal persons in relation to schizophrenic processes.

In June of 1956, The American Psychiatric Association published the fifth in a series of "Psychiatric Research Reports" entitled "Research Techniques in Schizophrenia"(74). This study represented 5 stimulating and argument-provoking approaches to the problem, including the work by Whitehorn(62) having to do with the relationship of the therapist to the outcome of therapy in schizophrenic patients previously mentioned.

CONCLUSION

In an effort to highlight the type and extent of research in schizophrenia in the United States during the past 190 years various references have been described according to certain categories of investigation. While no single review of all the studies

which comprise the literature to date is intended, it is believed that from a historical standpoint the present contribution may be of interest and use. The research projects reported all contain bibliographies which in themselves are additionally representative of many studies of importance and of the scope of the subject under consideration.

The author wishes to acknowledge the work done by the various members of the Committee on History of the American Psychiatric Association who collaborated in the compilation of this material, samples of which have also served as the basis for an exhibit presented at the Second International Congress of Psychiatry.

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SOME MOTOR ASPECTS OF SCHIZOPHRENIA: AN EMG STUDY

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We cannot get an accurate picture of the neurophysiology of neurosis and psychosis unless we include in our efforts a study of their motor components. A fact often overlooked is that motor activity within the central nervous system is intimately tied up with sensation, emotion, and thinking. There are no boundaries to separate these activities. An understanding of the neurophysiology of any of these, as well as their deviations in illness, must therefore include a description of the motor component. Present evidence and current thinking of numerous investigators favor the view that motor activity is more than just an end-product of psychic activity(1, 2, 4, 12, 18, 19, 20, 25, 26, 27, 28, 30, 31, 32, 33).

Compared to the neuroses and psychosomatic disorders, schizophrenia has received little study from a motor standpoint. Measurements of overt movement as well as of electromyographic activity during subjection of patients to certain stress situations have demonstrated greater degrees of motor reaction in schizophrenics than in control subjects(22, 24). EMG studies of the speech musculature in schizophrenics, combined with other observations, led Gould to the conclusion that auditory hallucinations were due to a motor disturbance of the speech mechanism rather than to a disturbance of perception(8, 9).

The studies to be reported in this paper³ deal with electromyographic measurements of the low levels of residual motor activity found in persons endeavoring to rest and re-

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lax as completely as possible in a quiet comfortable environment. Residual motor activity is for the most part invisible to the naked eye.

APPARATUS

In order to study these low levels of resting activity in the motor portion of the nervous system by electromyographic methods, it was necessary to design and construct an instrument that would give suitable readings. Jacobson and associates have previously described an integrating neurovoltmeter for recording such activity(13, 14). Our instrument was patterned after theirs but is different in certain significant respects.

The instrumentation requirements of this investigation were primarily to pick up, amplify, and indicate the muscle action potentials located on the surface of the skin. One read-out was to be an indication of the instantaneous level of activity. In addition, an integrator must accumulate the potential for a definite period of time so that it may be recorded periodically.

The weakest electrical signal that can be detected is always limited by the noise level in the first stage of the amplifier. As we were interested in measuring voltages at as low a level as possible, it was of the greatest importance to design a pre-amplifier with great care.

Thermal noise in the first vacuum tube may be considered the only source of noise over which we have no control. Other sources of noise are, of course, the same as experienced in all EEG and EMG recording, such as 60 cycle power line pick-up. Standard techniques for eliminating this interference were carefully observed.

To maintain the most favorable signal to noise ratio, the frequency response of the amplifier was restricted to what was found to be an optimum bandwidth. This is indicated in the block diagram of Figure 1 as a filter. The frequency response of the entire system is from 120 cps to 300 cps at the 3db points with a low end slope of 12 db per

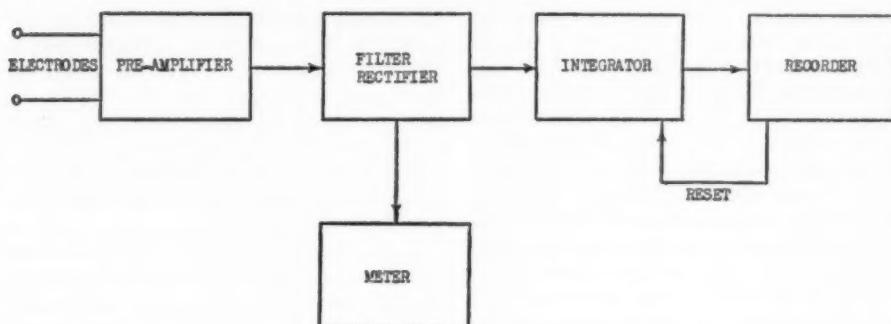


FIG. 1.—Block Diagram of Electromyograph.

octave and a high end slope of 8 db per octave.

In order to drive a d.c. meter the signal is full wave rectified. A common back-bias technique in the meter circuit enables the meter to be set at zero when only the amplifier noise is present, which is done with the electrode leads shorted together. This procedure amounts to a further reduction of the noise level. The noise level with no back-biasing is about $\frac{1}{2}$ microvolt equivalent at the input, and the effective noise level remaining after back-biasing of the meter is about 0.1 microvolt.

An R-C integrator was used with a linear range of more than a minute. The recorder, which is a multiple point printer, samples and records the potential on the integrator, and immediately thereafter trips a reset relay which shorts out the integrating capacitors.

Arbitrary periods of one minute were used as the integration time. Several signal channels may be used with one recorder, and the present work was done with 4 channels, one recording every 15 seconds.

Four amplifier channels and the recorder were mounted in a 19-inch relay rack, except for the 4 read-out meters which were in individual containers to be located in strategic places for monitoring purposes.

METHOD

All subjects lay in the supine position on a bed in a semi-darkened relatively quiet room. They were given the instruction "Rest

and relax as completely as possible and leave your eyes closed."

Continuous electromyographic readings of motor activity were taken simultaneously for 30 minutes from leg, forearm, jaw, and forehead regions. Surface pick-up electrodes were arranged in pairs (since the amplifiers were double-ended) and were placed over antagonistic muscles. Sanborn EKG paste was worked into the skin until the d.c. resistance between electrodes was 2000 ohms or less, and this resistance was measured again at the end of each period to be sure it had not changed. A ground electrode was placed a few inches away from each pair of pick-up electrodes. For the leg one Sanborn EKG electrode (measuring 3.2 cm. by 5.1 cm.) was placed over the anterior tibial muscle and the other over the gastrocnemius of the left leg. For the forearm one EKG electrode was placed over the extensor surface and the other over the flexor surface of the right forearm. To obtain readings from antagonistic muscles acting on the mandible an EKG electrode was placed over the left masseter muscle and a silver electrode measuring 1.8 cm. in diameter was placed in the submental region. Anatomical considerations as well as experimental tests indicated that this pair of electrodes recorded not only from the jaw-closing and jaw-opening muscles but also from some of the muscles controlling the tongue. To obtain readings from the muscles involved in frowning and raising the eyebrows one of the small silver electrodes was placed over the left corrugator muscle and the other in the midline over the

frontalis muscle. With electrodes paired in this fashion, activity in one, the other, or both of a pair of antagonistic muscles would give readings and it was not considered important to know which of the two muscles had been active. At the end of the test period the subjects were questioned to determine various subjective experiences such as whether they slept, whether they were in any pain or discomfort, whether they felt calm and relaxed or were nervous and restless, whether they were fearful, and what they could recall having thought about during the test period.

A group of 21 schizophrenic patients was compared to a group of 10 control subjects. The requirements for the schizophrenic group were that they have a clear-cut unquestionable diagnosis and that they show little or no sign of deterioration. No selections or calculations on the basis of type of schizophrenia were made. The patients varied from 21 years to 49 years of age with a median age of 35 years. The control group was selected from hospital personnel and the only requirement was that each subject should not ever have had a mental illness (psychosis). The control subjects varied from 23 years to 42 years of age with a median age of 33 years. A supplementary sub-

division of the control group into those persons relatively free from functional nervous symptoms and those troubled somewhat with functional complaints was also made. We say "relatively free from functional symptoms" for the one subdivision because it probably would not be possible to find a person completely free from functional complaints at all times.

A sample EMG is given in Figure 2 and will be used to show the method for processing the data contained in each EMG. One was selected in which the various channels do not cross each other because it is easier to see. Each point on the graph is the integrated level of motor activity for a period of one minute, which is approximately the mean value of the motor activity for that minute. This value is expressed in "units of motor activity" although with extra calculations it could have been expressed in microvolts rms. The "unit of motor activity" is an arbitrary unit obtained by dividing the maximum range of the graph paper on the point printer into 100 subdivisions. For those readers who prefer these values expressed in microvolts the approximate conversion figures are 25 units of motor activity equal 1 microvolt rms., 55 units of motor activity equal 2 microvolts, and 85

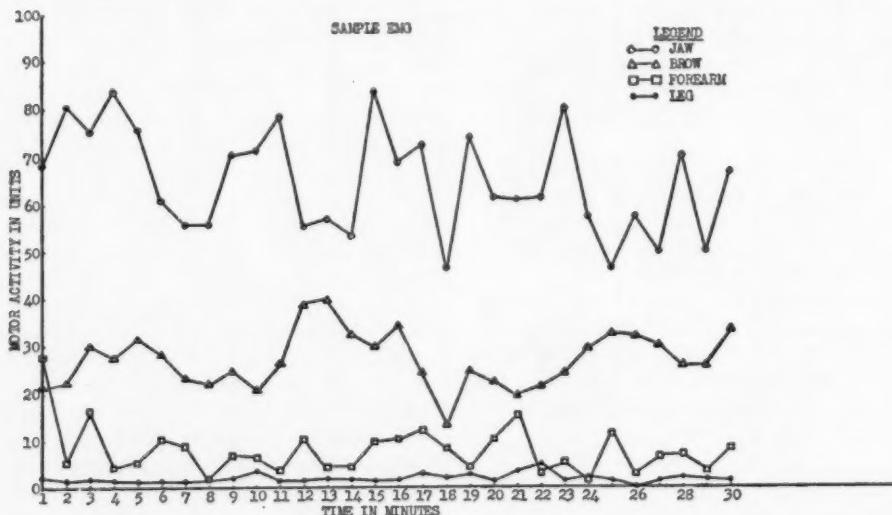


FIG. 2.—Sample EMG. One was selected in which the various channels do not cross each other. Each point on the graph is the integrated quantity of motor activity for a period of one minute.

units equal 3 microvolts. The instrument was calibrated both at the start of the period and at the end with a 1 microvolt rms signal at 200 cycles per second and at the end of the period with 2 and 3 microvolt signals as well. From the 30 points printed on the graph for each muscle area, a mean value was calculated. Values going off the top of the graph were assigned a value of 100 units since this is the highest point on the graph. From the mean values for each of the 4 muscle areas a grand mean was calculated. This grand mean is therefore a single number representing the mean quantity of motor activity for the entire 30 minute period.

For both the control group and the patient group, various mean values were calculated, as will be shown in detail in the section on results. The significance of each of these means was determined in accordance with the method described by Fisher(7). For the reader not familiar with the concept of the significance of a mean, this determination basically is answering the question "On the basis of the distribution of samples already obtained, what is the probability that a larger number of samples will give a different mean?". This probability can be calculated accurately and makes it possible to determine when a population sample is large enough to be representative of the population in question. In addition to the significance of means, the significance of the difference between the means of the control and patient groups was also calculated.

RESULTS

Table 1 shows the composition and various mean values for the control group. Table 2 shows corresponding information for the schizophrenic group. Figure 3 shows composite EMG's for the control group and the patient group. Each point on these graphs is the mean of the entire group for that particular minute and the points are plotted minute by minute for a 30 minute period. Table 3 gives a quantitative comparison of the control group and the patient group, and shows the significance of the differences between them. For both the control group and the patient group, the means of the grand means are highly significant ($P = <0.001$). The differences between the control group and the patient group with respect to the grand mean and the 4 individual muscle area means are highly significant ($P = <0.001$ for grand mean, forehead, and jaw; $P = <0.01$ for forearm and leg). It is remarkable to us that these 5 differences are quantitatively so nearly alike. They range from 33.9 to 36.4 units of motor activity. The difference in grand means was 35.0 units, the control group giving 19.9 units of motor activity and the patient group 54.9.

Another point to be emphasized is that the rank order of the 4 muscle areas is the same for both control and patient groups but the patient group is set at a higher level. This can be seen most clearly in Figure 3 which gives composite EMG's for the control group and the patient group.

TABLE 1

MEAN VALUES OF MOTOR ACTIVITY AND SIGNIFICANCE OF THE MEANS FOR THE CONTROL GROUP

Subject	Brow mean (Units)	Jaw mean (Units)	Forearm mean (Units)	Leg mean (Units)	Grand mean (Units)
1. F.L.	17.39	35.47	1.33	0.40	13.6
2. P.A.	25.61	26.56	0.28	2.98	13.9
3. C.B.	23.58	24.17	0.38	2.66	12.7
4. R.P.	11.95	18.48	1.06	6.66	9.5
5. J.F.	11.92	28.61	1.74	3.13	11.4
6. F.W.	40.84	38.12	12.31	6.08	24.3
7. J.H.	35.70	38.37	13.66	6.80	23.6
8. M.H.	33.56	35.22	50.29	12.30	32.8
9. L.S.	15.07	72.99	2.75	10.74	25.4
10. N.B.	47.50	67.45	10.91	2.21	32.0
Group Mean =	26.3	38.5	9.5	5.4	19.9
P Value =	< 0.001	< 0.001	< 0.1	< 0.01	< 0.001

TABLE 2

MEAN VALUES OF MOTOR ACTIVITY AND SIGNIFICANCE OF THE MEANS FOR THE SCHIZOPHRENIC PATIENT GROUP

Patient	Brow mean (Units)	Jaw mean (Units)	Forearm mean (Units)	Leg mean (Units)	Grand mean (Units)
1. M.P.	88.02	92.83	49.45	49.56	70.0
2. E.M.	76.34	100.00	55.96	84.74	79.3
3. V.H.	58.15	39.03	5.38	2.18	26.2
4. G.S.	40.30	43.06	13.89	3.17	25.1
5. M.J.	59.87	54.71	3.48	0.06	29.5
6. W.N.	26.19	40.02	12.63	34.19	28.3
7. E.M.	28.49	63.10	99.00	57.79	62.1
8. M.B.	60.78	73.85	98.86	86.67	80.0
9. J.M.	61.91	93.08	94.30	96.95	86.6
10. L.N.	58.20	64.20	8.00	6.60	34.3
11. B.P.	50.40	74.87	54.29	30.26	52.5
12. V.R.	76.99	99.95	67.43	83.29	81.9
13. L.S.	41.86	75.73	3.85	18.68	35.0
14. B.N.	78.73	76.58	8.68	2.38	41.6
15. M.O.	93.30	60.16	10.35	10.36	43.5
16. A.C.	43.58	91.09	15.01	78.71	57.1
17. M.R.	38.33	57.61	29.85	3.01	32.2
18. M.M.	82.74	96.96	97.58	67.52	86.2
19. D.T.	53.78	100.00	59.06	13.00	56.5
20. R.R.	47.46	78.48	97.67	100.00	80.9
21. E.Z.	99.29	98.10	56.56	4.89	64.7
Group Mean =	60.2	74.9	44.8	39.7	54.9
P Value =	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Only 5 grand means for the patient group overlap the range of the control group. They lie in the upper portion of the control range and none of them reach down to the mean value for the control group.

An interesting sidelight is the result obtained when the control group, which is composed of hospital personnel who have never had a mental illness, is broken down into two subgroups. One subgroup is made up of those persons relatively free from functional symptoms of any kind and the other

subgroup is composed of those who are troubled somewhat with functional complaints. The former included 6 subjects and gave a grand mean of 15.5 units of motor activity. The latter was composed of 4 subjects and gave a grand mean of 26.5 units of motor activity. Even though there are only 6 subjects in one subgroup and 4 in the other, the difference between their means is significant ($P = < 0.05$).

DISCUSSION

The activity we are recording in these experiments is most likely accompanied by increased activity in efferent neurons of the motor cortex and/or premotor cortex. Whether this hyperactivity of pyramidal cells plays an etiological role in the development of schizophrenia or is a consequence of the disorder is a very important question. Although we often think of motor activity in mental illness as being secondary to psychic processes we must not discard the reverse possibility prematurely. One reason for caution comes from research indicating the importance of motor states in the mainte-

TABLE 3

COMPARISON OF CONTROL GROUP AND SCHIZOPHRENIC PATIENT GROUP SHOWING THE SIGNIFICANCE OF THE DIFFERENCES

	Control group (Units)	Schizophrenic patient group (Units)	Difference (Units)	Significance of difference
Brow mean ...	26.3	60.2	33.9	$P = < 0.001$
Jaw mean	38.5	74.9	36.4	$P = < 0.001$
Forearm mean ..	9.5	44.8	35.3	$P = < 0.01$
Leg mean	5.4	39.7	34.3	$P = < 0.01$
Grand mean =	19.9	54.9	35.0	$P = < 0.001$

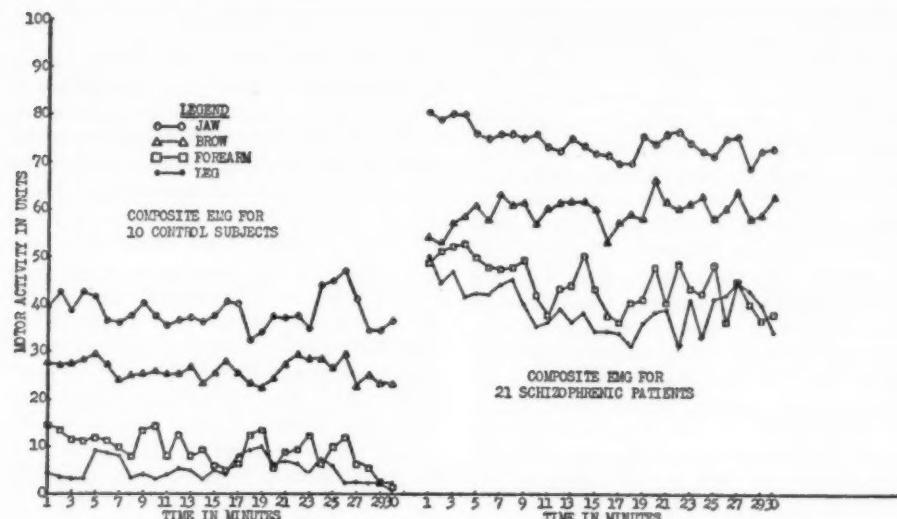


FIG. 3.—Composite EMG's for control group and patient group. Each point is the mean of the entire group for that particular minute.

nance of consciousness and the waking state (19, 28).

Hyperactivity of pyramidal cells can have widespread influence on the functioning of the cerebral cortex as well as subcortical structures. This influence would be exerted through the many collateral fibers given off at various levels along the descending axones and through afferent flow from proprioceptors activated when muscles contract. Many other neurons would thus become either hyperexcited or excessively inhibited depending on the nature of their connections with the hyperactive pyramidal cells.

There are indications from numerous sources that the act of thinking itself is in part a motor act involving pyramidal cells (1, 12, 26, 27, 30, 32, 33), and that feelings and emotion likewise are intimately tied up with motor states (3, 12). If this is the case it would not be hard to understand how hyperactivity of this motor system might lead to disturbances of thinking and of emotion. The point to be emphasized is that this possibility must be kept in mind and we must not jump to conclusions hastily.

This state of hyperactivity of the motor portion of the nervous system, whether localized or generalized, intermittent or con-

tinuous, static or phasic, overt or invisible, has been referred to in the literature as neuromuscular hypertension and also as neuromuscular hyperkinesis (12, 15, 16). Perhaps the expression "hyperponesis" would be even more descriptive. This word comes from the Greek "hyper" meaning excessive, and "ponesis" meaning exertion.

There is growing interest in this condition and in determining its exact position in the neurophysiology of functional disorders. More attention has been given to its relation to the neuroses and psychosomatic disorders than to its relation to schizophrenia. Malmo, Shagass, and Davis (23, 24, 29), consider excessive muscular tension to be probably of considerable importance in the production of symptoms in patients with functional disorders. They have reported instances in which symptoms of a "tired feeling" in the head and head discomfort were preceded by a sustained burst of high-level electromyographic activity in the frontalis muscle or in neck muscles. Wolf (34) found sustained contraction of the diaphragm to underlie a common type of functional dyspnea and precordial pain. He found it could also produce occlusion of the lower end of the esophagus and could do this before the con-

tractile state of the diaphragm was sufficient to produce respiratory difficulty. Kaufman (17) refers to a similar mechanism in discussing the syndrome of spontaneous hyperventilation. Holmes and Wolff (11) refer to a pattern of motor behavior which they call the "on guard" pattern, and state that when it is utilized as a way of life it may place an intolerable burden on the individual's emotional and physical equipment. Haugen (10) referred to this same motor pattern calling it a bracing reaction and expressed the view that without this bracing reaction no neurosis can develop and unless this bracing reaction can be permanently decreased or eliminated the patient remains vulnerable to an exacerbation of his illness. There are many other such reports too numerous to mention (4, 5, 6, 20, 21, 35). Jacobson has proposed neuromuscular hypertension as a fundamental disorder underlying some of the psychoneuroses and certain psychosomatic disorders and he considers this neuromuscular hypertension to be so fundamental that unless it is overcome the patient tends to remain ill, no matter what the therapy (12, 15, 16). He has evolved methods of therapy which attack directly the exaggerated motor state by a re-educative process.

Studies of motor activity in schizophrenia reported to date have dealt with overt movement or the high levels of electromyographic activity present while patients are carrying out some prescribed activity or are being subjected to a stress situation (22, 24). It is important to emphasize the difference between these studies and the ones reported here. In our studies the motor activity measured was that present while the subjects were lying at rest and was for the most part invisible to the naked eye. Equipment capable of measuring reliably small differences at these low levels of activity had to be constructed before these measurements could be made.

Nevertheless our findings complement those of Malmo and coworkers (22, 24). Whereas their schizophrenic patients responded to certain types of stress with excessive motor activity, our patients showed excessive motor activity while at rest.

SUMMARY

1. The value of studying motor activity in mental illness should not be overlooked. Motor activity within the central nervous system is intimately tied up with sensation, emotion, and thinking. An understanding of the neurophysiology of any one of these, as well as their deviations in illness, must include a description of the motor component.

2. Multi-channel electromyographic measurements on 21 schizophrenic patients and 10 control subjects are here reported. An electromyograph giving both integrated and instantaneous readings and capable of measuring minute amounts of motor activity was employed. Residual motor activity was recorded while the subjects endeavored to relax as completely as possible in the supine position. This residual motor activity is for the most part invisible to the naked eye.

Records were taken simultaneously from 4 muscle areas, namely forehead, jaw, forearm, and leg, for 30-minute periods. The patients exhibit higher levels of motor activity in all 4 muscle areas and the differences between these and the values for the control group are highly significant ($P = <0.001$ for forehead and jaw, and $P = <0.01$ for forearm and leg). Quantitatively these differences are remarkably similar for each muscle area. The grand mean for the patient group is 54.9 units of motor activity and for the control group 19.9 units.

3. This exaggerated motor activity is most likely accompanied by increased activity in efferent neurons of the motor cortex and/or premotor cortex. Such increased pyramidal cell activity could have widespread influence on the functioning of the cerebral cortex, as well as subcortical structures, through the agency of the many collateral fibers given off by these neurons. Since there is evidence that both thinking and emotion have motor components, it is reasonable that hyperactivity in the motor system might lead to disturbances of thinking and emotion. The possibility of motor system hyperactivity playing an etiological role of some type in the onset of schizophrenia should be kept in mind.

4. The term "hyperponesis" is suggested to refer to exaggerated activity within the motor portion of the central nervous system. This exaggerated activity may be localized to a portion of the motor system or generalized to include the whole motor system, it may be intermittent or continuous, static or phasic, overt or invisible.

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A PSYCHOSOMATIC STUDY OF ALLERGIC AND EMOTIONAL FACTORS IN CHILDREN WITH ASTHMA^{1, 2}

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We would like to report some findings from a collaborative study on allergic and emotional factors in children with asthma. The point of departure for this investigation is a frequently recorded observation (1, 10, 14, 17), namely that children with perennial, intractable asthma are often symptomatically relieved by admission to a hospital, even though maintained on the same medication in the hospital as they had received at home. Equally often they relapse upon return home on the same medication.

Various explanations have been offered for this observation. Stated in the extreme, they are:

1. Allergists assume that the asthma is perpetuated by continuous exposure to an allergen, e.g., house dust (17).

2. Psychiatrists assume that there is excessive interpersonal tension within the home, especially between the mother and the asthmatic child (1, 10, 14).

In both of these cases, hospitalization removes the irritant; be it allergenic or emotional.

3. Psychosomatic explanation regards the asthmatic symptoms as the result of a confluence of numerous factors—environmental, emotional, and allergic.

METHOD

Our study is in two parts. First, to test whether sensitivity to house dust is the only necessary factor for production of asthma we proceeded as follows:

1. Nineteen children with perennial, intractable asthma were hospitalized, 14 dur-

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ing an acute episode. The age range was limited to children from 6 to 12 years of age.

2. Allergic data collected included family history of allergy, past allergic history, and skin sensitivity to allergens.

3. The research group was divided into two groups on the basis of sensitivity to house dust.

4. When symptom-free, their hospital room was sprayed with dust collected by vacuum cleaning from their own home. The patient was then placed in the room for a period of from 4 to 12 hours, usually overnight. The dust was kept circulating with a fan. Evidence of asthmatic symptoms, wheezing, coughing, or other changes in respiration or physical discomfort were charted.

RESULTS

Part I

Figure I: In this figure is a further characterization of the research group and results of exposure to house dust during hospitalization.

In column 3, note that the sex distribution is 9 girls to 10 boys. In column 4 is charted the age at onset of asthma. This varied from 6 months to 9 years, with an average age of onset at 3½ years. In column 5 we have charted the ordinal position. There are 2 only children and 9 first born.

In the next column on allergic family history, two crosses means a history of allergy in both paternal and maternal lines. One cross means that only one line has a positive allergic history. Fourteen of our cases have a family history of allergy, of which 8 have such histories on both sides of the family.

In the column on other allergic symptoms, note that eczema occurs in 11 of the 19 cases.

Next, the severity of asthma was defined

MGH. UNIT #	NAME	SEX	AGE REFERRAL	AGE ON SET	ORDINAL EXPOSURE	FAMILY HISTORY	OTHER SYMPTOMS	SEVERITY ASTHMA	IMPROVEMENT IN HOSPITAL	SIGN TEST S	BEST W.S. EXPOSURE	
919347	S.W.	♀	6½	1½	1	+	0	+	+	0		
912949	N.T.	♀	7	3	½	++	ECZ.	+	+	0	0	
924253	C.F.	♀	8	4	½	++	0	0	+	+	0	
638124	J.W.	♀	9	1	½	0	ECZ.	+	+	+	0	
781637	C.C.	♀	9	4	½	++	ECZ	+	+	0	0	
881286	P.H.	♀	9½	2½	½	+	0	0	+	+	0	
562740	D.W.	♀	9½	2½	½	+	ECZ.	+	+	+	0	
908382	E.O.	♀	9½	9	½	+	0	+	+	+	0	
918846	J.W.	♀	12	6	½	++	0	+	+	+	0	
866870	J.C.	♂	8	½	½	+	0	0	+	+	0	
965029	O.P.	♂	9	3	½	+	ECZ.	+	+	+	0	
808608	G.K.	♂	9	4	½	0	ECZ.	0	+	+	0	
791873	T.M.	♂	9	½	½	++	ECZ.	+	+	+	0	
580585	R.T.	♂	9½	5	½	0	0	0	+	+	0	
878452	R.W.	♂	9½	5	½	++	ECZ.	+	+	+	0	
746307	M.B.	♂	10	3	½	++	ECZ	+	+	0	0	
609246	R.P.	♂	10½	1	½	0	ECZ.	+	+	0	0	
866762	R.E.	♂	11½	6	½	++	0	+	+	+	0	
773948	W.W.	♂	12	6	½	0	ECZ.	+	+	+	0	

FIG. 1.

arbitrarily by the presence of x-ray evidence of pulmonary emphysematous changes. Fourteen of the 19 cases had such changes.

In column 9, we have charted improvement on hospitalization. This is misleading. Five of the 19 cases were hospitalized for this specific study and did not enter in an acute asthmatic attack, although they had had chronic symptoms. The other 14 cases were hospitalized in an acute attack, and although maintained on essentially the same medication as at home, the acute episode subsided within 24-48 hours.

In the following column, we record results of skin sensitivities to house dust.

There are 14 positive reactors, and 5 negative reactors.

In the last column are recorded the results of exposure to their own house dust. In the first case, the patient's nutritional status was too precarious to allow the minimal risk of exposure to her own house dust. In the remaining 18 cases there was no evidence of respiratory changes by stethoscopic examination although their rooms were sprayed heavily with dust far exceeding any concentration that could have been normally circulating in their own homes.

We were surprised at these results, as we had anticipated that in at least some cases we

would precipitate asthma. As a further step, one child, who lived above a bakery and who was markedly sensitive to wheat, had flour sprayed in heavy concentration into her room while in the hospital. There was no evidence of respiratory changes. Another step was to place at the disposal of the parents an electronic dust precipitator which clears the air of the finest particulate matter at a 99% level. In two cases the use of this precipitator in the home did not relieve asthmatic episodes with the child at home.

DISCUSSION

A crucial question arises: is house dust an allergen? About this we can only say that it is common practice in allergy clinics to assume that it is a true allergen, to skin test people for sensitivity to it, and if indicated to follow through with desensitizing procedures. From our results, we cannot say that house dust has no allergenic properties, but it is clear that it is not the only necessary factor to produce asthma.

We emphasize that our cases are highly selected by our initial criteria. They were perennial, intractable asthmatics and with one exception were exposed to only one allergen; *i.e.*, house dust. Our findings cannot be generalized to true pollen asthma. We do not doubt the essential nature of an allergic predisposition in these children. However, we feel these findings point to a more complex etiology of asthmatic episodes. These results clearly indicate that exposure to house dust is not a sufficient cause for the production of asthma.

METHOD

Part II

In studies by French and Alexander (8), and Jessner, *et al.* (11), the central conflicts in asthmatic children and their mothers are described. Briefly summarized, these clinical impressions were:

1. Child's need to be close to mother. The asthmatic child expresses a special need for closeness to his mother. The need, or strength of the need, is not so specific for asthmatics as is the form in which this need is expressed. The needs are symbolized by:

- a. symbiotic fantasies of union with mother;
- b. fantasies of being one of twins; c. clustral fantasies.

2. Mother's need for closeness to the asthmatic child. The mothers of asthmatic children often revealed the unconscious wish to maintain the child in an infantile dependent attachment.

3. Source of this need in the mother. Mothers of asthmatic children have active unresolved conflicts stemming from early key figures in their childhood.

Our aim here was to explore the relationship of these factors to the child's asthma and to his improvement through hospitalization. We proceeded as follows:

1. The children were interviewed by a child psychiatrist while in the hospital and in weekly follow-up appointments after discharge from the hospital, if the parents' permission and cooperation was forth-coming. From this material, the present psychological status and essential conflicts were formulated.

2. The mother was similarly seen by the social worker to evaluate her current psychological status, her conflicts in relation to the child, and to obtain a detailed developmental history.

3. The following psychological tests were given to the child while in the hospital: Draw-A-Person, Story Completion Test, TAT, The Blacky Pictures, brief IQ test. We compared the protocols with those obtained from hospitalized non-psychosomatic patients. These non-psychosomatic cases were matched with the asthma cases for sex, age, and social economic status.

RESULTS

Part II

Our goal in administering the psychological tests was to investigate the possibility of using a fairly standard psychological battery to test clinical impressions about the need for closeness and the fear of closeness to mother in children with asthma. We felt this would help answer the question of why there is improvement with hospitalization. We hoped to interpret the psychological data by means of scoring procedures that were both objective and pertinent to the complex

dynamic relationships which Alexander and French(6), Margaret Gerard(9) and other clinicians have described in asthmatic patients.

Our first step was to formulate as testable hypotheses those clinical insights gathered from the literature and our own clinical experience which we considered basic to an understanding of asthma. The result was 12 statements or hypotheses about the nature of the difference between a group of asthmatic children and a matched sample of hospitalized, nonpsychosomatic children.

Next we constructed appropriate scoring procedures with which to test the hypotheses whenever we could not find a suitable mode of analysis. As the research progressed, we had to revise some of the scoring rules. This amounted in essence to revising our testing instrument at the same time as using it with research cases. Our results are therefore contaminated. This report is only to illustrate a few of the trends which give promise of significant results when applied to a new sample.

To clarify the methodological approach followed here, let us take a closer look at one hypothesis, at the scoring categories used to measure the data pertinent to it, and at the results obtained.

The second hypothesis, the one we shall examine, attempts to specify in greater detail the nature of the closeness to his mother which the asthmatic patient seeks. There are many kinds of pathologically close bonds between a child and his mother, many forms of dependency. We accept Alexander's concept of asthmatic dependency versus oral dependency. This belief we express in the second hypothesis as follows: "Children with asthma, as compared with other children of the same age level, have a stronger wish to return to the state of closeness to mother that existed before birth." This hypothesis explicitly asserts that children with asthma have in common one particular type of close tie to their mother. Implicitly it differentiates the 'wish for intra-uterine closeness from other regressive wishes, such as the wish to be fed, the wish to consume and the wish to retain, and states that the latter are not common to all asthmatic children. Individuals have many types of wishes

and a given wish usually has multiple meanings. But if this hypothesis is correct, we should be able to detect group differences between asthmatic children and controls with respect to this one particular form of regressive wish, but not necessarily with respect to the others.

One of the ways we tested the hypothesis involved counting the number of clastral fantasies in the protocols. We specify very precisely what is to be scored as a clastral symbol both in the drawings and in the thematic projective tests. Briefly we follow H. A. Murray(13 A) and score as clastral all places that are described as small, dark, secluded, safe, warm, private, or concealing. We include islands, enclosed valleys and certain versions of paradise and any space in which one can float unsupported, such as on clouds or in water. Death, when it is seen as a protection to which one escapes from conflict or when it is regarded as providing an opportunity for rebirth, is scored.

The TAT, to take only one of our instruments, yielded impressive differences. We counted individual mentions of clastral symbols and in addition the number of stories whose major theme could be classified as clastral; i.e., as one in which the search for a clastral object occupies a central role in the plot of the story or in which the story itself has to do with birth, rebirth or being an orphan. Richard's TAT protocol contains 14 clastral symbols. Two of his 11 stories have main themes that are clastral. The control patient matching Richard has no clastral symbols in his TAT protocol and none of the major themes in his stories are clastral themes. This comparison is typical. Most of the asthma patients had many more clastral symbols than did their controls. The group as a whole had roughly three times as many. Ten out of 16 asthma patients had one or more clastral major themes but only 3 of the 15 control patients did. The relatively unstructured TAT seems to tap clastral fantasies more consistently than do the more structured tests.

In addition to creating clastral fantasies there are other ways in which a person can exhibit the existence of strong regressive dependent wishes. Our particular battery of tests provides no measure of overt be-

havior. We felt we could approach the problem indirectly, however, by studying the effects of dependency needs on fantasies relating to achievement. If the hypothesis were correct, asthmatic patients would tend to tell stories in which activity is undertaken in order to effect a reunion with someone or to please someone. Achievement needs would be subsidiary to dependent needs. Control patients would have a higher proportion of stories in which the goal of achievement is something not involving dependency, such as self satisfaction or power. Accordingly we devised a ratio in which the contrast is between what we call "dependent activity" and "constructive activity." We feel that this ratio taps clastral regressive wishes as differentiated, for example, from oral dependency wishes. The scoring is straight forward.

Richard had 15 achievement episodes in his TAT protocol—a much higher number than any other patient. His control had only 5. But these absolute numbers are unimportant. When we examine the ratio of dependent: constructive activity for these two boys we find that it is 3:2 for Richard and 0:5 for his control.

The ratio between "dependent activity" and "constructive activity" is roughly 2:1 for all of the asthmatics and 1:9 for all of the control patients. Achievement episodes which are scored as "dependent activity" rarely involve attaining oral gratification.

This brief account of some of the measuring instruments we used to test one of our 12 hypotheses and of the results obtained with our sample gives you some idea of the way in which we handled the psychological data. It also clarifies the reason for our being able to present results in a meaningful fashion only after describing the scoring categories. We devised a number of ratios and objective measures which we regard as powerful tools of data analysis.

Alexander has observed that it is the fear of separation from mother and not actual separation which bothers asthmatic patients. There is also a fear of being too close to mother, so separation can act to reduce anxiety. One measuring device pertinent to hypothesis VI, which states that asthmatic children perceive the realization of their

wish to be close to mother as dangerous, is the illness-home: illness-away ratio. More of our asthmatic patients describe the hero in the projective stories as ill when he is at home or as improving when away from home. The ratio is roughly 10:1. More of the control patients, on the other hand, describe the hero as ill when away from home and well when at home. For them, the ratio is roughly 5:8. Richard describes the hero as ill in three of his TAT stories. Each time the *illness* occurs while the hero is at home and twice there is improvement when the hero visits a friend. Richard's ratio is 3:0. That of his control is 3:2. Twice in the latter's stories it is clear that *improvement* occurs at home. The other three stories, being ambiguous as to the locale, we have scored conservatively as "illness at home."

Another factor which could operate to reduce anxiety during the patients' hospitalization and therefore bring about an improvement in their asthma is the use of effective defense mechanisms. One such mechanism is suggested in the observation that patients with asthma have a special capacity to elaborate and derive satisfaction from reunion fantasies when separated from the loved one. We stated this in hypothesis form, and devised a ratio to permit testing it. This measuring tool can be applied only when there is a contrast in the projective material between a pleasant fantasy and the reality which follows upon it. Our findings are positive. The asthma patients expressed disappointment with reality in 22 out of 28 contrasts; whereas, the control patients did so in only 5 out of 30 contrasts. They were more apt to consider reality to be as good or as better than the fantasy.

To sum up these findings and present them within a clinical context we present the following case.

Case Illustration.—Richard, a 9½ year old boy, was admitted to the Massachusetts General Hospital because of persistent asthma of one month's duration. He was small for his age, weighed only 43 pounds and looked chronically ill. There were moderate emphysematous changes in his chest, with coarse wheezes throughout both lung fields. Within 12 hours, he improved markedly without specific therapy other than an aminophylline suppository. Although he was sensitive to house dust, when house dust was sprayed into his room, he showed

no respiratory change. Within a week after discharge his asthma returned.

Figure II: The pertinent medical and social history of Richard is outlined on this life chart. Reading from left to right there is the chronology in years, starting with March, 1946, Richard's birthday. Next is his age, then pertinent medical history,

period of eczema, onset and course of asthma, and pertinent social history.

Richard is the oldest of 3 children. He was a full term normal delivery with a birth weight of 7 lbs. 3 oz. Because of her feeling of disgust regarding nursing, mother placed patient on the bottle in spite of the fact that she had plenty of milk. The initial struggle between mother and child over feeding was reinforced at 6 months

LIFE CHART R.W.					
YEAR	AGE	MEDICAL HIST.	ECZ.	ASTHM	SOCIAL HISTORY.
MARCH 1946	0	F.T.S.D. B.W. 7.8 BOTTLE FED. MANY FORMULA CHANGES			MO. DISAPPOINTED - WANTED GIRL DISGUST & NURSING
1947	1	WALKED TALKED			FAMILY MOVED FROM NYC → BOSTON CLOSER TO M.A.M.
1948	2	TOILET TRAINED			
1949	3	WEANED WHOOPING COUGH			
1950	4	MEASLES			
1951	5	MAY - T AND A JUNE ASTHMA DIAGNOSED			MOTHER PREGNANT
1952	6				BROTHER BORN OCT. 1952
1953	7	ASTHMA 1-2X/MO. WINTER > SUMMER			OPERATION ON BRO. PYLORIC STENOSIS BROTHER DEVELOPS ASTHMA
1954	8	DEC. FIRST M.G.H. CONTACT			MOVED TO SUBURB OCT. 1954
1955	9	ASTHMA WORSE SEPT 15-24 } HOSP. M.G.H. NOV.-DEC. ON } NETA CORTONEJ			MOTHER PREGNANT BUT - THREATENED MISCARRIAGE
1956	10			?	SISTER BORN JAN. 1956

FIG. 2.

when Richard developed eczema. Many shifts in formula led mother to feel he was starving to death. Mother gave him the bottle whenever he wanted it until he was 3, saying that he was a chronic poor eater. Eczema cleared at 2 years.

At 5 years, patient developed asthma one month after a T&A and during his first year at school. Mother was also pregnant at the time with patient's brother. In spite of the fact that brother developed asthma at 7 months and has had periodic attacks, mother has never expressed anxiety about his asthma. Richard's asthmatic attacks have continued at the rate of once or twice a month, with attacks more frequent around the time of the opening of school and in the winter.

In December, 1954, Richard was first seen at the Massachusetts General Hospital Out Patient Clinics where he was found to be sensitive to ragweed and house dust. In May of 1955, mother became pregnant again and in August Richard commenced wheezing continuously and was admitted to the Massachusetts General Hospital on September 16 for one week.

Figure III: This shows the family constellation with some pertinent information on the background of father and mother.

Richard's mother was the third of 5 girls. During her childhood and adolescence she felt that she was never able to communicate any of her needs to her mother. Her father, of whom she was fond, was quiet and frequently absent on his fishing schooner. She experienced loneliness and isolation

which was in part mitigated by her relationship to her oldest sister. Following the birth of her youngest sister, who was 9 years younger, she developed the fantasy that her mother feared and hated her pregnancies. Currently she felt that her mother hated her daughters to become pregnant. Her fantasies about pregnancy developed out of witnessing her mother's severe bleeding during the pregnancy with her youngest sister. Her mother and sister were not expected to live. Her ideas of bleeding and fear of either pain or death in connection with pregnancies were strongly reinforced by a T&A at the age of 9. Into this experience which occurred at the time of her mother's pregnancy she wove her ideas of danger and death into fantasies about dangers of pregnancy.

Because she devaluated her husband, she did not find love and companionship in her marriage. Her husband had great early deprivation with loss of his father at the age of 11. At 14, he helped support his mother and only sister. At 17, he entered the Coast Guard and at 18 he married mother within two months after his mother had re-married.

In each pregnancy, mother wished for a daughter. At patient's birth, she was disappointed and later when he developed eczema considered him ugly. On the other hand, she stated he made up her entire world and she his. Consequently neither, "she nor he had any need for father."

In the current situation this close bond continues—"Richard knows what I want, what I feel, and what I need." He helps with the housework and worries about her health.

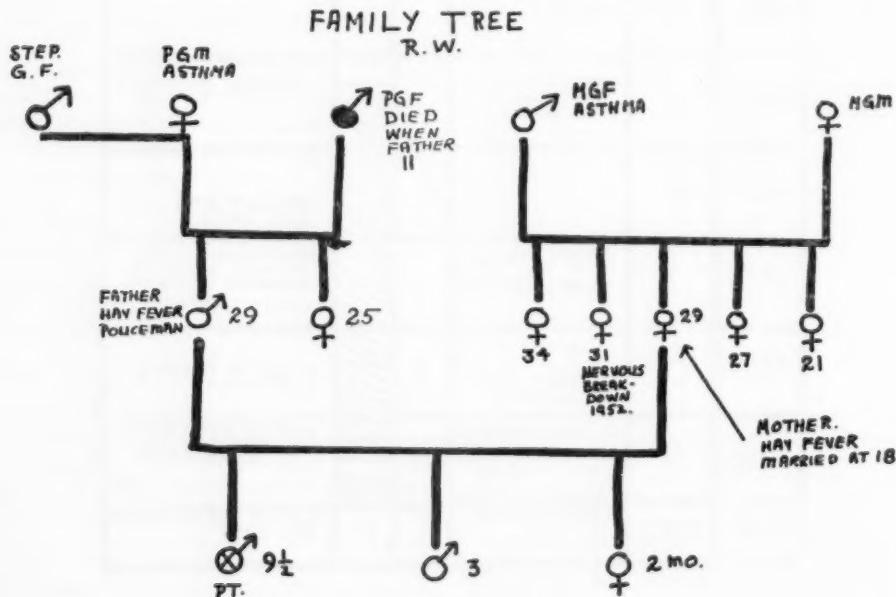


FIG. 3.

At the time of patient's admission to the hospital, mother was 4 months pregnant. Mother's delivery of patient had been uneventful. Her second delivery, however, had been a precipitant one in her obstetrician's office. This experience blended with her previous fears of dangers of pregnancy had colored her attitude towards her third pregnancy. When threatened with a miscarriage, one month before Richard's admission, mother denied her own anxiety and became increasingly concerned about patient's asthma. Patient actually had had a good spring and summer and only commenced to wheeze at the time of mother's bleeding. Mother's anxiety about patient choking to death or possibly dying came to a climax the night of patient's admission to the hospital. At 3 A.M. that night she forced her pediatrician to hospitalize patient.

During Richard's hospitalization, mother stated that she experienced great relief as she felt the emergency had been taken care of. The doctors and nurses would see that nothing happened to patient. She appeared free of anxiety and free of any ambivalence towards Richard. She was sympathetic to all his needs and spent every afternoon with him. It was as if each hospital visit was a reunion with patient who appeared to respond with a similar feeling of being united with a giving mother. She spoke of her relief in knowing that he would be able to obtain whatever he wanted to eat in the hospital. In speaking of food, mother stated she herself was eating better and would gain her usual 43 pounds. (Mother's gain in weight during pregnancy is equivalent to patient's current weight.) She also spoke of not having to become impatient with his physical appearance. Without any apparent insight, mother described patient as "looking like an old woman who walked as if he were carrying a heavy load, who breathed with difficulty and only wanted rest." During this latter description mother's own breathing was labored.

Immediately after patient's return home mother's anxiety was manifested again and she complained of the hospital's failure to cure him. She spoke in detail about the recurrence of all his symptoms. Her anxiety mounted and the patient responded with wheezing. Her anxiety diminished only when the social worker dealt with her anxiety about pregnancy directly.

In talks with the psychiatrist, Richard reflected his concerns about his feelings toward his father and mother. While in the hospital, he predominantly was concerned about his father. He idealized him and wanted to be like him. He told stories, real or fancied, of his father's heroism while in the Coast Guard, of how his father had saved his ship on several occasions. He told of his father's early life and of the struggle father had had financially, almost in Horatio Alger terms. Richard was quite sad and wistful in his longing for a closer relationship to his father whom he admired very much. There were no regressive wishes or fantasies expressed.

After he left the hospital, his asthma promptly returned and his concerns abruptly shifted to mat-

ters dealing with his mother's pregnancy. He was very anxious and curious about sexual matters, expressing this in a symbolic manner. For example, he wondered why he had trouble learning to multiply in school. The therapist wondered what confused him about multiplying. He became anxious and didn't want to talk about this. After a silence, he said there were some words at school he had trouble with—words like fungus. He thought it was like the plant, mistletoe, which grows on trees and lives off the sap of the tree. Should there be too much mistletoe it would take all the food of the tree and the tree would die. Here we think he expresses directly his concern and anxiety over his mother's pregnancy, but more important, this expresses Richard's regressive wish for closeness to his mother.

Following this, Richard told a story of a scientist who changed a lion into a person, but the scientist died before he could complete the job. The only traces left of the lion are the long hair, long nails, hair on the arms, and protruding teeth. He tells how this half animal—half human was probably really half woman because lions are supposed to have such a rough tongue, like sandpaper, that should they lick your skin it would peal right off. They demolish meat by licking it—"Peal the skin right off."

In this fantasy, we feel Richard distorts the image of mother for a specific purpose. He first expresses regressive wishes for closeness to the mother through the fungus-mistletoe fantasy. This wish is felt as dangerous to the ego. He then distorts his feeling perception of the maternal object in order to serve the defensive purpose of maintaining his equilibrium and counteracting the regressive wish.

We see in this case a mother with overwhelming anxiety. Her pregnancy mobilized latent conflicts from her early childhood. She denied her own anxiety by displacing fears for her own safety onto the patient. Richard expressed his feelings toward mother through the mistletoe and lioness fantasies. Hospitalization places both the patient and mother in a situation where reality rather than fantasy is dominant. As Alexander has said, the threat of separation is more difficult for asthmatics than is actual separation itself. Actual separation reduces fantasy and substitutes reality.

To summarize the points we wish to emphasize in this case:

1. There is a too close ambivalent tie between the mother and child. Mother and patient's needs were so closely bound together,

it was not always possible to distinguish between them.

2. The mother showed an unresolved over-dependence on her own mother and unresolved conflicts in relation to her mother's pregnancy with her sister.

3. Current and overwhelming anxiety was aroused in the mother by her pregnancy.

4. She displaced her anxiety onto the patient's illness and tried to deal with this anxiety by hospitalizing patient.

5. She utilized the child's illness to reinforce her own defensive manoeuvres.

6. The patient expressed his regressive wishes towards his mother through the symbol of the fungus-mistletoe.

7. This regressive wish was perceived as dangerous and was defended against by the fantasy formation of the lioness.

8. Severity of patient's asthma seemed related to mother's pregnancy and anxieties.

SUMMARY AND DISCUSSION

1. Eighteen children, hospitalized for asthma, when exposed to their own house dust showed no demonstrable change in their respiration irrespective of their skin sensitivities to house dust.

2. Our clinical studies describe a need for closeness in the asthmatic child which is expressed here as a regressive wish. This regressive wish is felt by the child's ego as obstructive to further growth and development, and therefore as dangerous. This psychological conflict allows for an explanation of why hospitalizations lead to improvement of asthmatic symptoms.

3. We have described a methodology for validating clinical impressions. Our results are reported as trends which hold true only for *this* asthma group vs. *this* control group. We think that the analysis of our psychological test data shows that it is possible—though difficult—to devise objective ways of measuring dynamically meaningful hypotheses. We also feel there is good reason to believe that our particular choice of hypotheses has been fruitful in the study of asthma in children.

4. In a clinical study of the mothers of asthmatic children, we found evidence of the mother's wish to maintain the child in

an infantile dependent state. Further, that this way of dealing with the asthmatic child stemmed from mother's own early unresolved conflicts.

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DISCUSSION

ABRAM BLAU, M. D. (New York, N. Y.)—I am impressed with this preliminary report of a basic piece of research in child psychiatry and psychosomatic medicine. The authors more or less accept that the organism is a holistic biological unit, that the dichotomy of physiology and psychology is an artificial abstraction, that both and more must be considered in psychosomatic research. Furthermore, they examine the psychosomatic principle of asthma of French and Alexander concerning the regressive drives to a symbiotic relationship with the mother. Following Saul and Lyons, asthma is also connected with psychobiological conflictual drives and counter-drives regarding the "memory" of the organism for the intrauterine phase, when the respira-

tory and integumental systems function in the medium of amniotic fluid.

The authors are to be commended for also examining physiological factors. They found that house dust was not a crucial factor. Pollen sensitivities should also be tested against the psychological factor and, to my mind, until proven or disproven, we should not yet commit ourselves one way or the other. It is my belief that the pure allergic explanation is very rarely adequate as a degree of sensitivity to various allergens may be found in all persons at various times of life, especially in the young. Thus, something more, probably the psychological factor, must also be considered in these respiratory disorders.

In the last section, the authors seem to contradict themselves. On the one hand, they say that "no clearcut personality patterns in the mother emerged," and then go on to show the special symbiotic problems of the mothers. It is inconceivable to me that this and other psychosomatic conditions

in children are not intimately related to the maternal character neurosis. In our experience, the psychosomatic conditions in children are complementary *folie à deux* conditions. It can be argued, as suggested partly in this paper, that the illness in the child calls forth certain reactions in the mother. Undoubtedly there is a reciprocal process with mutual feed-back effects, but the basic etiology must be sought in the original maternal neurosis. This is important not only in theory, but if true, has basic implications for prevention and treatment. In psychiatric research of the type of this report, it would be well to examine clearcut theses and to avoid as much as possible the pitfall of straddling the issue on both sides of the question for the sake of an appearance of scientific fairness.

Finally, I know that the authors are aware of the limitations inherent to a small series of 18 cases. This worthwhile work should be continued and followed by other studies so that enough statistically significant data are accumulated.

CHARACTERISTICS OF AN ACUTE CONFUSIONAL STATE IN COLLEGE STUDENTS¹

HELEN B. CARLSON, M. D.^{2, 3, 4}

INTRODUCTION

In this preliminary report, characteristics of an acute confusional state in college students will be described, in terms of onset, course, and symptoms, as well as etiological factors, prognosis and treatment. A psychodynamic reconstruction of this state will be discussed. We would separate this group from the psychoses and psychoneuroses for the purposes of this study.

Confusion as defined in a textbook on psychiatry is a

disturbance of consciousness characterized by impairment of the sensorium by difficulty of grasp, bewilderment, perplexity, disorientation, disturbance of associative functions and poverty of ideas. The face of a confused patient presents a distressed, puzzled and at times, surprised expression. It is confined largely to the acute stages of certain mental diseases, especially those associated with toxic, infectious or traumatic factors, although it occurs also in hysterical and epileptic dream states and sometimes under conditions of great emotional stress(1).

Harry Stack Sullivan relates confusion to anxiety(2),

The effect of severe anxiety reminds one in some ways of a blow on the head, in that it simply wipes out what is immediately proximal to its occurrence. If you have a severe blow on the head, you are quite apt later to have an incurable, absolute amnesia covering the few moments before your head was struck.

Rosenfeld(3), in a psychoanalytic study of confusion in chronic schizophrenia, concludes that "The confusional state is associated with extreme anxiety" and "The whole self is in danger of being destroyed."

¹ Read at the 113th annual meeting of The American Psychiatric Association, Chicago, Ill., May 13-17, 1957.

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⁴ We are indebted to Dr. Harry B. Lee for material on one case.

The problem of confusion first came to my attention about 8 years ago when I was called one night to a sorority house at Northwestern University to see a disturbed student.

The patient was a senior, about to graduate with Phi Beta Kappa honors, after which she planned to be married. When I saw her a diagnosis of paranoid psychosis was made and the patient was removed by her family to a sanitarium for treatment. From her sorority sisters and housemother a history was obtained that she had done very well scholastically up to 2 weeks prior to this consultation. At that time she became confused, unable to concentrate, anxious, and agitated, keeping the whole house in an uproar night after night. The question arose whether this patient could have been saved a psychotic break if she had been seen earlier.

Since that time through a Counsellor Educational Program it has been possible to see referred students within a few days of the development of confusion. Diagnostic interviews have been done on about 100 students in a state of acute confusion out of a psychiatric population of 4,000 students over an 8 year period. Most of them, with private psychiatric help, have been able to continue with their university course. A group of psychiatrists interested in the problems of the college-age student have formed a research seminar (under the sponsorship of the student health service of Northwestern University). For the past 4 years, this group, meeting bi-weekly, has studied the confusional state in college students of the Chicago area.

METHOD

Case material from 20 students, 17 of whom were from Northwestern and 3 from other colleges in the Chicago Area, included 8 to 353 psychiatric consultations per patient. Sixteen of the students were undergraduates and 4 were graduate students. In 1 case there was a tape recording of 17 hours of consultation; in the rest of the cases hour by hour notes of the psychiatric interviews were taken.

Detailed presentation of the onset, course, symptoms, and treatment of each was made

to the Research Seminar, followed by psychodynamic formulation and reconstruction of the significant etiological factors in the genesis of the confusional state. Comparison of the influential factors in these cases was made. This report expresses the opinion of the whole group. The responsibility for the discussion and conclusions reached, however, is mine.

RESULTS

Description of confusional state.—Presenting complaints of these confused students in addition to the terrifying confusion, included inability to concentrate, anxiety, alternate rage and depression, a feeling of helplessness and loneliness, disruption of goal motivation and a feeling of loss of personal identity. Examination revealed an attitude of desperately seeking to overcome the confusion, paranoid and depressive trends, and a withdrawal from activities, as well as agitation, anger or crying.

In Table 1 there is a tabulation of 7 of these symptoms in the 20 cases studied, with an evaluation of the severity of each symptom. Table 2 gives a group evaluation of the withdrawal from academic and social activity that was present at the time of con-

fusion, as compared with preconfusion activity.

To describe this confusion constellation more clearly, 2 cases referred to the same psychiatrist are presented.

CASE 19.—This 19-year-old single white girl was referred to the Student Health Service during her first year of college because of complaints of confusion, inability to concentrate, cutting of classes, and depression with suicidal threats. After one interview she was put in the Infirmary for her protection and her family was notified. An interview with a psychiatrist in private practice was arranged. Patient agreed to psychotherapy and was discharged from the Infirmary and allowed to continue in classes. She improved a great deal, temporarily, but 2 months later she was again brought in to the Student Health Service with a reactive depression. She was withdrawn from school and went home with her father. Her subsequent condition is not known to us.

In the initial interview she appeared dazed and talked with symbolic reference to her mother's home as "wanting to see the rolling hills of West Virginia," and her lonesomeness at school as "disliking a flat landscape." During the interview she spoke of being depressed and wandered over to the window as she was talking.

Interview with the private psychiatrist 5 days later, was described as follows: She said she kept the appointment because she is afraid of father who had accompanied her to the interview and did not want to spend spring vacation with him. Her parents have been divorced since patient was 4 years

TABLE I
SYMPTOMS ASSOCIATED WITH CONFUSIONAL STATE

Case	Age	Sex	Confusion	Inability to concentrate	Anxiety	Agitation	Depression	Paranoid	Rage
1.....	22	F	XX	XXX	XX	—	XX	X	X
2.....	19	F	XXX	XXX	XX	XX	XXXX	X	XXX
3.....	17	M	X	X	X	X	XX	X	X
4.....	24	M	XXX	XX	XX	—	—	X	XX
5.....	20	M	XXXX	XXXX	XXXX	XXXX	XXXX	XXX	XXX
6.....	19	F	XXXX	XXXX	X	X	XX	XX	XXXX
7.....	19	M	XXXX	XXXX	XXXX	XXXX	XX	XX	XXXX
8.....	19	F	XXXX	XXXX	XXXX	XXXX	XX	X	XXXX
9.....	21	M	XXXX	XXXX	XXXX	XXXX	XXXX	XX	XX
10.....	23	M	XXX	XXXX	XXX	XXX	XX	XX	X
11.....	21	F	XXXX	XXXX	XXXX	XXX	XXX	X	XXXX
12.....	20	F	XX	X	X	—	X	X	X
13.....	22	M	X	X	X	X	X	X	X
14.....	18	F	XX	XX	X	—	XX	—	X
15.....	23	F	XX	X	X	X	X	X	X
16.....	20	F	XX	X	X	X	X	X	X
17.....	19	F	XXX	XXX	XX	X	X	XX	XXX
18.....	26	M	XXX	XX	XXX	XXX	XXX	—	XXXX
19.....	22	M	XXX	XXXX	XXX	XX	XX	XX	X
20.....	23	M	XXXX	XXXX	XXXX	XXX	XX	X	XXX

XXXX—Extreme degree of symptoms

XXX—Marked degree of symptoms

XX—Moderate degree of symptoms

X—Slight degree of symptoms

TABLE 2
WITHDRAWAL FROM ACTIVITY DURING ACUTE
CONFUSIONAL STATE

Case	Psychosocial adjustment before confusion		Psychosocial adjustment during confusion	
	Academic	Social	Academic	Social
1.....	XXX	XXX	X	X
2.....	X	X	X	X
3.....	XXX	XX	XXX	X
4.....	XXX	XX	X	X
5.....	X	X	X	X
6.....	XXX	X	X	X
7.....	XXX	XX	X	X
8.....	XXXX	XX	X	X
9.....	XXX	X	X	X
10.....	XX	X	X	X
11.....	XX	XX	X	X
12.....	XX	XX	X	X
13.....	XXXX	XXXX	X	X
14.....	X	X	X	X
15.....	XXXX	XXXX	X	X
16.....	XXXX	XXXX	X	X
17.....	X	X	X	X
18.....	X	XXXX	XX	XX
19.....	XXXX	XX	X	X
20.....	XXXX	XX	XXX	XXX

XXXX—Excellent adjustment

XXX—Good adjustment

XX—Fair adjustment

X—Poor adjustment

old and although she had been in father's custody, she wanted to visit mother during spring vacation. Father had demanded that she use her own money for next quarter's school expenses rather than use it for the trip to visit mother.

Patient was neatly dressed in a man's shirt and Bermuda shorts. Throughout the interview she paced about the office or sprawled on the chair or couch, sat on the floor, looked at the books and thoroughly inspected every detail of the office. She talked rapidly and coherently but was easily distracted. "I don't want to see my father. Can he hear me? Your couch is hard. Those are nice bookends. Why doesn't he leave me alone? I won't talk to him. Where does this door lead to? What time is it?" She appeared tense, anxious and constantly on the move. Toward the end of the interview she had quieted down and was sitting cross-legged on the chair. She wanted to know if therapist was going to talk to her father. She said she wouldn't be caught in the same room with him. She didn't see how talking about her problems would help her, but she agreed to arrange for psychotherapy twice a week. She ignored her father as she left the office.

Patient described her situation as follows: she was struggling with the same problems that she had most of her life, i.e., the fact that when she was 4, father divorced mother on grounds of adultery and took patient and her 1½ year younger brother into his custody. Mother moved out of the house and patient was restrained from seeing her. Father had

wanted her to be a boy and treated her as one, encouraging her into active sports. He was alternately seductive toward patient and hostile, cold and restricting. Patient and her brother united against father. About 3 or 4 years after the divorce father married a woman much younger than himself who could not cope with the intense relationships between father and children. As patient matured she began to hope to get out from under father's domination and her projected visit to her mother during spring vacation was important to her from this point of view. Her father's frustrating it, patient felt, was one of the precipitating events. Another factor associated chronologically with the onset was the fact that she had, for the first time, developed a close relationship with a boy. Apparently this relationship increased her ambivalent conflict about men. Up to this time patient had handled her fears of men with a counterphobic attitude, engaging in dangerous sports, (skiing and horseback riding with her father) and excelling as a leader and a student. Her associations indicate that development of an attachment to her boyfriend revived the memory of her parents' separation and divorce and undermined her security. These attitudes were expressed directly and in the transference relationship with the therapist. Patient came to treatment 12 times over a 3 month period, canceling and breaking many appointments, as a provocative expression of her conflict. Her confusion subsided, the depression lifted somewhat and she attended classes more regularly. However, an accident to her boyfriend, for which she blamed herself, precipitated a reactive depression with suicidal impulses to the point where she was forced to withdraw from school.

The dynamic formulation of this case is as follows: the urge for independence from a restricting father, that came with maturation, intensified the conflict with father and increased her insecurity. The development of a close relationship with a boy with its sexual temptation in an insecure college environment, reactivated the childhood trauma with fear of catastrophe that had beset her at the age of 4 when her parents were divorced. Feminine identification with her mother, was associated with the expectancy of being unsuccessful in marriage and being virtually an outcast as her mother was. Death wishes toward her father were probably reactivated when her boyfriend was injured. The subsequent reactive depression can be understood as a transformation of her guilt. Pictures the patient painted at the time of her confusion expressed feelings of isolation and catastrophe. One was a scene of a barren throne room. A child was standing behind an empty throne. The king's crown had rolled onto the floor. Another picture was one of desolation and isolation. An erupting volcano had laid barren the whole landscape.

CASE 2.—This 22-year-old girl was a junior at Northwestern, having transferred the previous fall from a girls' college. She was referred to the Health Service with symptoms of mild confusion, inability to concentrate, cutting classes, and depression with suicidal preoccupation. When she was 3 her security was shaken by several terrifying

events: 1. she was unprepared for her sister's birth; 2. her mother almost died of an illness for which she had been hospitalized; and 3. she had heard her parents quarreling and threatening to separate because of an affair her mother was having. However, the mother did get well, the parents did stay together, and the family life settled down to one with some quarreling between parents. The family moved several times during patient's school years. Patient developed into a girl who was shy at first contact with a new situation, but was able to master it eventually, doing excellent work scholastically and becoming a leader in sports and newspaper work and dramatics. When she entered a small college 2 years before the present condition, she had a period of mild confusion and depression. She consulted a psychiatrist at this time, but left and went back to school after 5 hours of treatment over a 2 week period. She attributed this disturbance to feeling of being isolated and unwanted in a new situation. The more serious depression and confusion she had at Northwestern occurred in the spring of the year when she had developed a close relationship with a boy.

This patient was treated for 122 hours, being seen 2 or 3 times a week. At the end of that time there was some resolution of her conflicts. She graduated from college and moved to her home town where she was further treated.

The dynamic formulation in this case is similar to that of Case 1. Patient's feelings of fear and insecurity were handled during her childhood and early adolescence by overcompensatory achievements of academic success and leadership. However, in an insecure college environment when the sexual temptation associated with a close relationship with a boy developed, it activated early fears of catastrophe, associated with the threat of mother's death and threat of parent's separation when she was three. This reactivation of early fears increased her insecurity to the point where the overcompensatory mechanisms failed to bind her anxiety and confusion resulted.

Although in many cases there was a bewildering number of conflicting impulses expressed in rapid succession within any one interview in this confusional state, in some of our treated cases it was possible to recognize a sequence of symptoms in this kaleidoscopic picture. Three phases have been distinguished in the acute confusional state: 1. rage, 2. confusion, and 3. mastery of confusion. Each of these phases had characteristic conscious behavior and content of thought associated with it, as well as characteristic unconscious or preconscious productions such as dreams, daydreams, conscious feelings, artistic productions or actions. Description of these phases is as follows:

PHASE 1.—Rage was the predominant affect. The patient denied responsibility for

the feeling; it was felt to be an uncontrollable impulse, a foreign body. Usually the fear of acting-out the rage was intense, but sometimes there was little fear, only the impulse. In one case a student interested in becoming a minister developed an impulse to kill his wife and child. There was intense fear that he would not be able to control himself. Another student was afraid he could not control his impulse to strangle his fraternity brother while they were wrestling together. In another case, however, where a young man had the impulse to run down his girl friend with his car there was very little restraint in the form of fear. Dreams of catastrophe were commonly associated with this phase of the confusional state. In these dreams the violence came from an external, often deanimated source, such as tornadoes, volcanoes, fires, shipwrecks, or plane wrecks. The affect associated with these dreams was excitement, rather than fear.

PHASE 2.—Confusion. This phase was accompanied by a feeling of terrifying isolation, helplessness, emptiness and worthlessness. Impulsive suicidal thoughts were expressed. Patients often felt that it would be better to be dead than in this helpless terrorized state. The feelings of terror and isolation were sometimes replaced by a formless feeling of dread and impending doom. Dreams included being terrified and alone on a desert or in some barren rocky place. One patient described his feelings as follows: "I felt like the wall was caving in on me—everything was pressing in on me. It was going round and round. I was so confused everything swam before my eyes. I was going to be squashed. I didn't know where to turn."

PHASE 3.—Problem solving with resolution of confusion. In this phase there was a building up of defenses. The affect associated with this stage was that either of an anxious wish to help mankind (a reaction formation against destructive impulses) or a feeling of depression. Problem-solving dreams were typical for this phase. They usually started with the patient being in a strange place trying to get home. He felt dazed and confused at the unfamiliarity of everything around him and made unsuccess-

ful attempts to find his way home. There was a feeling of hope in these dreams, however; and finally at the end of the dream he either found his way home or came to familiar territory and he knew which way to go. Locomotion was prominent in these dreams, usually on foot or in a car.

The sequence of these 3 phases is seen in the material of a 19 year old freshman in the school of engineering, who developed a confusional state 2 months before entering college. Excerpts from a tape recording of his case history include 3 successive dreams with associations characteristic of the three phases:

RAGE

Dream 1: "One morning my mother told me that the previous night I had grabbed my brother's arm who was asleep next to me. I had thought it was a snake. If my Dad and Ma hadn't stopped me I would have broken his arm—trying to kill the snake. My brother was screaming and was trying to pull away. I guess I must have had a death

grip on him, because when they did wake me up I saw finger marks on him. I was so surprised." The next night patient had the following dream:

CONFUSION

Dream 2: It seemed there was a hole in the wall and it just seemed to get bigger and bigger and bigger until it got as big as the room. I was terrified. I work up startled, nervous and shaking."

The next night patient had a sleepwalking experience where, without knowing it, he walked out of the bedroom window. The window screen broke his fall and he woke up bruised and shaken on the ground below. He was hospitalized for a few days by the family physician until he recovered his composure. During his recovery he had the following dream:

PROBLEM SOLVING WITH RESOLUTION OF CONFUSION

Dream 3: "I thought I was in a forest, a dense forest. The sidewalk with the street lights seemed like some place I wanted to head for. It was a highway and there was car coming down it and this car would take me back home."

Psychopathology in the Background.—Review of the backgrounds of these 20 students

TABLE 3
HISTORY OF PSYCHOPATHOLOGY PRIOR TO ONSET OF CONFUSIONAL STATE

Case	Psychiatric symptoms	Psychosomatic symptoms	Character neurosis
1.....	Depression Provocative behavior Previous confusion	Migraine headaches	Hysterical
2.....	Fear of isolation Provocative behavior	Acne vulgaris	Schizoid
3.....	Feelings of inferiority	G.I. distress-underweight	Compulsive
4.....	Rage reaction Conversion symptoms	—	Compulsive
5.....	Anxiety-learning phobia	—	Schizoid
6.....	Anxiety	Amenorrhea	Schizoid
7.....	Anxiety	—	Hysterical
8.....	Anxiety-sleepwalking	—	Compulsive
9.....	Depression	—	Hysterical
10.....	—	Fainting	Hysterical
11.....	Anxiety	—	Schizoid
12.....	Depression Provocative behavior	Colitis	Compulsive
13.....	Depression Provocative behavior	—	Compulsive
14.....	Depression Temper tantrums	—	Compulsive
15.....	Depression Provocative behavior	—	Compulsive
16.....	Depression Provocative behavior	—	Compulsive
17.....	Depression-rage reaction	—	Schizoid
18.....	4 episodes of confusion in past 5 years	G.I. distress	Compulsive
19.....	—	—	Compulsive
20.....	Fear of cancer Anxiety—Depression	Fatigue	Compulsive

revealed that for the most part they came from middle class American backgrounds, representing all areas of the country. All but 2 lived on the college campus. All of these students were in the upper half of their high school class and on the whole they were successful socially in high school. There was a diversification of character structure as well as previous psychiatric and psychosomatic illnesses as evaluated by us. Four students were considered to have an hysterical character, 11 a compulsive character and 5 a schizoid character. Histories revealed psychiatric symptoms prior to our examination to be: previous confusion in 3 cases, provocative behavior in 5 cases, depression in 8 cases, anxiety state in 5 cases, aggressive behavior in 3 cases and one case each of sleepwalking, cancer phobia, learning phobia, fear of isolation and feelings of inferiority. (Table 3.) Psychosomatic symptoms included 2 cases of gastrointestinal distress and one case each of migraine headaches, spastic colitis, acne vulgaris, amenorrhea, underweight, fainting and fatigue. None of these students was seriously handi-

capped physically. In the early family background extreme parental insecurity and disharmony were revealed. Before the patient was 6 years old there was a divorce in 2 cases, threat of separation in 4 cases, psychosis of the mother in 2 cases, and death of the father followed by depression of the mother in one case. In 4 cases the father wanted a boy and got a girl, which led to rejection of the girl in the feminine role. In 2 cases there was rejection by the mother who was busy taking care of ailing grandparents. In 4 cases there was excessive paternal pressure on the patient to succeed. In 2 cases there was early maternal deprivation due to economic hardship in an emigrant family. (Table 4.)

Factors Associated with Onset.—The actual circumstances of onset and the immediate precipitating event were often lost in confusion, but from the material we have, the last straw was usually insignificant in and of itself. For example, the confusion may follow a phone call or letter from home where usual parental criticism is expressed, or it may occur during an examination or, pos-

TABLE 4

TRAUMATIC EVENTS OR SITUATIONS IN CHILDHOOD IN STUDENTS WITH ACUTE CONFUSIONAL STATE

Case	Traumatic situations or events
1	Mother almost died of illness when patient was 4. Mother had affair and parents threatened to separate when patient was 4.
2	Father divorced mother for adultery when patient was 5 and took patient and brother into his custody. Father wanted patient to be a boy and treated her as one.
3	Psychotic grandparents living with family. Maternal neglect of patient due to economic hardship of immigrant parents.
4	?
5	Suspicious mother—intimidating father.
6	Mother had manic-depressive psychosis since before patient's birth. Patient "conceived in hate." Patient raised by erratic relatives and housekeepers.
7	Mother rejected patient to take care of sick parents and demanding husband.
8	Economic hardship in immigrant parents. Parental disharmony with threat of separation.
9	?
10	Physician uncle emotionally involved with mother lived in home. Seductive and rejecting toward patient, diagnosed patient as "effeminate" without proper cause.
11	Father attempted to push Mother out of car when Mother pregnant with patient. Parents divorced when patient was 1.
12	Father wanted boy. Parents threatened to separate.
13	Father ill, mother insecure. Parental disharmony with threat of separation.
14	Father unfaithful. Excessive parental pressure on patient to succeed.
15	Father wanted boy. Mother mentally ill, committed suicide when patient was 13.
16	Parents wished patient to be a boy. Parents threatened separation.
17	Father died when patient was 3. Mother depressed.
18	Father passive and silent. Mother dominating and intolerant. Patient "squeezed" between two preferred siblings.
19	Father demanding and critical.
20	Mother mentally ill when patient was 2. Mother seductive toward patient.

sibly, during or after an argument with a roommate, and so on. (Table 5.)

The emotional stratum upon which these minor events were based, however, is of extreme importance. The three commonest problems of these students were: 1. Insecurity due to a new environment (or threat of a new environment). Of the 20 students studied, 17 of them had recently come to college and the other 3 were anticipating career and marriage problems following graduation. 2. Difficulty in making a satisfactory heterosexual adjustment. All 20 of these students were concerned with their

sexual adjustment in the college life, where, who one dates and how much are of great status importance. In 13 cases there was a feeling of trauma at the sexual level prior to the onset of the confusional state. Most of these students were overwhelmed by the development of their first serious love relationship. In only one case did the relationship proceed to the point of intercourse. 3. Conflict with parents over choice of career. In 9 cases there was a conflict between the student and his parents over choice of career. Usually a father wanted his son to prepare for a career similar to his own, irrespective

TABLE 5
FACTORS ASSOCIATED WITH ONSET OF ACUTE CONFUSIONAL STATE

T—Transfer student F—Freshman S—Senior GF—1st year Graduate

Case	Status	Situation and events
1.....T		Confronted by heterosexual commitment.
2.....F		Confronted by heterosexual commitment coincidental with conflict with demanding father who kept patient from divorced promiscuous mother.
3.....T		Confronted by heterosexual commitment. Living with severely disturbed family.
4.....T		Conflict with demanding father, psychotic grandparents, rejecting mother.
5.....T		Strong dependence on father figures. Disturbed when exposed to sexual temptation.
6.....T		Father used patient as vehicle for own ambitious demands by demanding that he become physician, contrary to patient's inclination or capability, disturbed mother.
7.....F		Being sent away to college understood by patient and psychotic parents as a final and total parental rejection.
8.....F		Patient's winning scholarship to college represented a threat to father's role as head of household and led to separation of parents.
9.....S		Married (and accidentally became pregnant) to spite father for not allowing her to marry boy she loved. Father controlled patient by threat of coronary if displeased.
10.....S		Accepted to medical school. Mother died 2 yrs. previously. Sexual temptation toward provocative stepmother made patient feel unworthy to become physician.
11.....T		Slept with mother until left for college. In competition for mother with uncle (physician), seductive toward mother. Worried about career, rejected by girlfriend.
12.....FT		Heterosexual temptation and rejection by stepfather and psychotic mother.
13.....TS		Confronted by heterosexual commitment. Death of favorite aunt with whom patient was in competition for father's affection.
14.....F		Delinquent behavior in high school. Anxiety re career and marriage.
15.....S		Parental pressure for social success. Disturbed when discovered father had a mistress.
16.....GF		Depreciated by father who had wanted a boy. Mother committed suicide when patient was 13, anxiety following intercourse with boy she planned to marry.
17.....FT		Car accident two yrs. previously in which boyfriend died. In conflict with father who objected to marriage choice.
18.....GF		Father died when patient was 3. Mother used suicide threat to push patient to succeed academically.
19.....GF		External pressure due to wife, infant, full time job and school work. Conflict between responsibility toward family and ambition to become minister.
20.....GF		Father demanded academic success. Sexual temptation of dormitory life preoccupied patient and kept him from studying.
		Threat of mother's death from Carcinoma of breast. External difficulties in getting married. Fear of cancer from rectal fissure.

of whether or not the student had the capability or inclination to do so.

Actual traumatic events were of relatively minor importance. In no case was the confusion directly related to illness or accident.

Outright rejection of the patient by the parents was of importance as a precipitating event in only 2 cases. In both cases the mother was psychotic and the father joined forces with her against the girl. In both of these cases the patient felt that she was not wanted at home and going away to college meant banishment from the home.

TREATMENT

These acutely confused students were considered to be psychiatric emergencies. They were seen by a psychiatrist immediately after the confusional state was recognized. All 20 students lost their acute confusional symptoms and 18 of them were able to continue in school and make a psychoneurotic

adjustment. (Table 6.) The follow-up period is too short as yet to determine whether these favorable results will be sustained. Of the 2 who did not adjust, one patient developed a reactive depression following a serious accident to her boyfriend and she withdrew from school; another patient continued with her schizoid adjustment following resolution of the confusion. She attempted to fail at her school work to spite her parents and was advised to withdraw from school.

DISCUSSION

Our findings substantiate the conclusions of Rosenfeld(3) that confusion results from an overwhelming of the ego with destructive impulses. We would explain the confusion as follows: these patients reacted with rage to an insecure situation with a combination of internal and external conflicts, so that they felt trapped in a state of anxiety

TABLE 6

TREATMENT

Case	No. of hrs. of Rx.	Type of Rx.	Adjustment at end of Rx.		Follow-up on treatment	
			School	Social	Months after Rx.	Outcome
1.....	122	Brief Psychotherapy	XXXX	XXXX	6	Further Rx.
2.....	12	Brief Psychotherapy	X	X	4	Further Rx.
3.....	353	Brief Psychotherapy	XXXX	XXXX	12	Improvement sustained
4.....	25	Intensive "	XX	XX	24	Improvement sustained
5.....	22	Brief Psychotherapy	X	X		Further Rx.
6.....	262	Brief Psychotherapy	X	X	36	Further Rx.
7.....	17	Brief Psychotherapy	XX	XX		
8.....	256	Brief Psychotherapy	XXXX	XXXX	36	Improvement sustained
9.....	25	Intensive "	XXX	XXX	1	Further Rx.
10.....	250	Brief Psychotherapy	XXXX	XXXX	24	Improvement sustained
11.....	12	Brief Psychotherapy	XXX	XXX	3	Further Rx.
12.....	44	Brief Psychotherapy	XXX	XXX		
13.....	72	Brief Psychotherapy	XXX	XXX		
14.....	8	Brief Psychotherapy	XXX	XXX	216	Further Rx.
15.....	104	Brief Psychotherapy	XXX	XXX	24	Improvement sustained
16.....	40	Brief Psychotherapy	XXX	XXX	12	Improvement sustained
17.....	22	Brief Psychotherapy	X	X	1	Further Rx.
18.....	30	Brief Psychotherapy	XXX	XX		
19.....	25	Brief Psychotherapy	XXX	XX	24	Improvement sustained
20.....	105	Brief Psychotherapy	XXXX	XXX	1	Further Rx.

XXXX—Excellent adjustment

XXX—Good adjustment

XX—Fair adjustment

X—Poor adjustment

whether they made attempts to change their situation or retreat from it. The rage toward others was transformed into a feeling of being unloved which was associated with a feeling of being alone and isolated, according to the formula, "Because I do not love, I am not loved; therefore, I am worthless." The symptom of confusion appeared to be a preconscious cognition of ineffectiveness (or loss) of defenses.

Secondarily, confusion may be used as a defense against the rage during the period of reintegration until functioning defenses have been restored.

Although the acute confusional state described here has some features in common with other nosological entities, it is not identical with any other condition we have found described in the literature.

The confusional state is similar to the acute schizophrenic reaction in the suddenness of onset and in the withdrawal from activities. However, it differs from schizophrenia in the following ways: 1. It occurs in relatively healthy individuals. 2. It is a transient, reversible condition rather than a chronic irreversible one. 3. The regression that takes place is not accompanied by ego fragmentation such as that seen in schizophrenia; for example, there are no delusions, hallucinations, or depersonalization. 4. The transference reaction is one of desperately seeking help, appropriate to a stress situation, rather than the remoteness of schizophrenia. 5. There is no disassociation of affect, as found in schizophrenia. This condition is similar to what Sullivan(2) has briefly described as "failure of disassociation," by which he means a failure to develop paranoid or depressive defenses. He says failure of disassociation is accompanied by "dread and horror when a person is led to reveal his weakness." "These feelings are the nearest anybody comes to the reality of the disassociated components of his personality unless he plunges into the waking bad dream of schizophrenia."

On the other hand, this condition has some features in common with that of depression as described by Edward Biebring(4). He finds a withdrawal from activity, and a feeling of worthlessness and helplessness in depression which he considers due to an ex-

haustion of ego defenses. The confusional state, however, includes more than this, *i.e.* paranoid trends, inability to concentrate and confusion.

We consider the acute confusional state to be an emergency anxiety reaction to a combination of stressful conditions, where environmental insecurity is associated with internal conflicts of both shame and guilt in young adults of reasonably strong ego, who have suffered severe infantile trauma.

The mechanism of regression to the confusional state has not been defined as yet, but one possible explanation is the following: the patient, becoming enmeshed in a shame-guilt spiral (as described by both Alexander and Piers), is catapulted back to an early, poorly-differentiated stage of ego development, where defenses are weak and free-floating anxiety is great.

Our favorable results can be attributed to the fact that this condition is transient, and that it is reversible. Factors influencing this good prognosis are: 1. The ego is fairly strong in these relatively well-adjusted students. 2. There is an ego resiliency associated with youth. 3. The relatively irreversible commitments of adulthood with reference to choice of career and object relation have not yet been made. The opportunity for improvement in the life situation is greater than it is in adults. The good prognosis in these students is in accord with a number of reports in the literature on adolescence, such as Aichhorn(7) in the field of delinquency, Grinker(8) in army stress situations, and Farnsworth(9), Wedge(10), and Darling(11) in the field of college mental health.

Our findings are in general agreement with the thesis of Erickson(12) who speaks of "identity diffusion" in describing the problems of adolescence. He considers this condition to be emergency reactions in the maturation process rather than actual psychopathological reactions. However, we have seen this acute confusional state in older adults, so that we would not consider this state to be exclusively an adolescent problem.

To what extent the theory of Selye(13), that stress, internal as well as external, is important in the psychopathology of this confusional state remains to be seen.

CONCLUSION

An acute confusional state has been described, occurring in young adults in colleges in the Chicago Area with specific characteristics as to genesis, presenting complaints, onset, course, and treatment. Psychodynamic reconstruction is as follows:

In childhood these patients were bound in an extraordinarily strong dependent relationship to their parents through guilt and fear, engendered by parental instability and disharmony. With subsequent dependent gratification and support these patients were able to achieve a conforming type of adjustment and gain success in academic and social achievements. However, in young adulthood when they attempted to find their own identity, through choice of heterosexual partner and choice of career, in the college environment, devoid of dependent gratification, their previous adjustment was inadequate to meet their needs. Sexual temptation or commitment led to guilt, which led to retreat. Retreat, in turn, led to shame and ridicule from the peer group. To avoid the shame, another attempt at conforming sexual behavior is attempted, and once more guilt, retreat and shame. In this way, either thrusts toward accomplishment or retreat from it are associated with anxiety. Under these circumstances, if the dependent gratification from parents is cut off due to their criticism or disapproval, the patient regresses to an early childhood fixation point, associated with primary anxiety, rage, and confusion, where he feels isolated, worthless, mistrustful and depressed. Recovery from the confusion occurs when the patient, who desperately seeks help, finds someone to lean upon. If inadequate help to meet his needs is found, introjection or projection of rage may result.

Further study to delineate this confusional

state would include: 1. Psychological tests for independent verification of our results, 2. biochemical tests to compare the chemical changes in this condition with that found in anxiety states associated with other conditions, 3. further understanding of treatment and preventive measures, 4. sociological study of the college community to elucidate factors related to the development of security in young adults in college, 5. study of the background (family as well as the community) from whence these patients came and 6. control studies on college students without confusion.

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AN EVALUATION OF FUNCTIONAL PSYCHOSES IN OLD AGE¹

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For many years almost all psychoses appearing initially after the age of 60 have been regarded as the outward behavioral manifestation of cellular pathological change. A recent statistical study indicated that some 85% of psychoses occurring after the age of 60 were diagnosed as senile dementia or cerebral arteriosclerosis, and only 7% were considered to be functional in origin(13). Closer examination of these statistical studies, however, suggests that the incidence of these so-called organic psychoses is intimately related to certain social factors, such as occupation, marital status, etc. This seems to indicate that there may have been reluctance on the part of psychiatrists to make a diagnosis other than cerebral arteriosclerosis with psychosis, or senile dementia with psychosis, in patients over the age of 60. Although certain changes in intellectual capacity have been demonstrated to occur with aging, and would have to be considered in evaluation(10), it would seem to be doubtful that they could be established as playing a primary etiological role in all of these cases. The significance of these illnesses as a major public health problem was recognized(11), but research in this area was largely confined to investigation of anatomical and physiological pathology and palliative therapy (3, 12).

For some time reports have appeared which raised serious questions as to the validity of the established concept of etiology in these cases. Neuropathological studies of the brains of individuals who had shown marked behavioral aberrations during the later years of life, and the brains of others who had not shown behavioral disturbance, indicated no correlation between anatomical pathology and behavioral pathology(17). There were reports of the successful treatment of so-called senile psychotics by electro-

convulsive therapy(7), which at least suggested that there was a large functional element in many of these psychotic reactions, and that the same type of causal factors might be operating as in the psychoses occurring in the earlier years of life. These developments have now reached such a point that in some circles it is considered to be well established that the demonstrable anatomical pathology is not responsible for the psychoses occurring in later life(20).

Clinical experience at the University of Texas Medical Branch Hospitals seemed to indicate that there was a high incidence of functional psychoses occurring after the age of 60, and this contrast with the usual reported experience was so definite that a detailed review of the incidence of various diagnoses was undertaken. In a 5 year period, covering the calendar years 1950 through 1954, a total of 1,134 patients over the age of 60 was admitted, of whom a psychiatric diagnosis was made. Approximately 72% of the diagnoses were psychotic reactions of one type or another, and when these were examined as a group, we found that 70% were functional and only 27% were cerebral arteriosclerosis with psychosis or senile dementia with psychosis. The functional diagnoses were predominantly syndromes in which the symptom of depressed mood is characteristic. This furnished striking confirmation of previous suggestions that depressive illness is characteristic of this age period(15), and that transitory depressed periods are common(3). This contrasted sharply with the previously mentioned incidence report(13), in that illness characterized by depressed mood was reported as only slightly more frequently than other functional psychoses. Within an institution of this type, however, there were many factors which could operate to cause a bias in these findings. We were, therefore, somewhat hesitant to accept this evidence as completely valid, and felt that further investigation of a wider area might eliminate some of the factors which cause bias.

We compared our hospital incidence with

¹ Read at the 113th annual meeting of The American Psychiatric Association, Chicago, Ill., May 13-19, 1957.

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a recent survey conducted by one of the authors(9), of the incidence in the entire state of Texas, during a 2 year period, of patients who were diagnosed as psychotic for the first time in their lives. This information was gathered from all psychiatric hospitals and services in the state, including both public and private, and from the office files of psychiatrists in private practice. These data when closely analyzed gave further evidence that there is a higher incidence of functional psychosis over the age of 60 than is generally thought. Of a total of 2,248 cases, aged 60 and over, 27% had a diagnosis of functional psychotic reaction, 62% a diagnosis of cerebral arteriosclerosis or senile dementia with psychosis, and 11% other organic psychosis, irrespective of the source of psychiatric diagnosis and treatment. When these were broken down to those diagnosed in a public mental hospital (state, city, county or veterans administration) and those diagnosed in teaching hospitals or private hospitals, a significant change occurred. The public mental hospital cases showed an incidence of 11% functional psychoses, 78% cerebral arteriosclerosis or senile dementia with psychosis, and 11% other organic psychoses. These figures agree fairly well with the previously mentioned incidence study. The incidence from teaching or private hospitals, however, showed a marked shift toward the functional disorders, with an incidence of 51% functional psychoses, 37% cerebral arteriosclerosis or senile dementia with psychosis, and 12% other organic psychoses.

We felt that these findings suggested that either a differential diagnostic bias was operating in the two different types of hospital, or that a significant difference existed between the kinds of psychotic patients in public mental hospitals, and those hospitalized in other institutions. This evidence seemed to us to be sufficient to indicate that there was a much higher incidence of functional psychosis in old age than previously reported, and that an investigation into the other causal factors was needed, as we suggested in a previous paper(22).

There have been indications in other studies that social factors were of significance(13), although these seemed to have been lost or ignored, principally due to the

belief that most psychoses were of an organic nature(14). In Malzberg's statistics from New York State there were indications that other than organic factors were operating in the cases in which an organic diagnosis was made: for instance, a person aged 60, whose spouse was still living was only one-third as likely to develop a psychosis as one whose spouse had died. A person aged 60 living on a farm or in a town less than 2,500 population was only one-half as likely to develop a psychosis as was the resident of an urban area. In other investigations it was found that significant improvement in overt behavior in so-called old age psychotics could be brought about by increased social activities in a mental hospital(1). There were sociological examinations of the role of the aged in our society which indicated that there were sources of difficulty which could operate as a causal factor in old age psychoses(5). Reduced social interaction or social disarticulation was implicated as an etiological or contributory factor in mental illness in old age(4, 8). There have been many theoretical papers and discussions which have urged the importance of certain psychological factors in mental illness in the later years of life, and have encouraged research from this approach(4, 18, 23). There were proposals that investigations of this area be organized within the frame of reference of age and sex categories in the life cycles of the individual(2). It seemed then that a detailed analysis of the previously mentioned statewide incidence study(9) should give confirmatory evidence of the operation of societal causal factors if they were of significance in the etiology of the mental illnesses of later life. There are 3 major ethnic groups in the state—Anglo-American, Spanish-American and Negro, which made it possible to compare additional social-cultural differences. In view of the possibility of diagnostic bias we did not feel that it was wise to discard the cases in which a diagnosis of cerebral arteriosclerosis or senile dementia had been made, hence, the following analysis is of the total incidence (Table 1). We compared the incidence rates for the 3 ethnic groups by rural versus urban, migrant status, marital status, and occupational class. We found that for patients becoming psy-

TABLE 1

ANNUAL INCIDENCE RATES OF PSYCHOSES AGED 65 AND OLDER BY SEX, ETHNICITY, URBAN-RURAL, AND MIGRATION-STATUS, PER 100,000 POPULATION, TEXAS, 1951-1952

	Males: (Age 65+)				Females: (Age 65+)				
	Anglo	Spanish	Non-white	Total		Anglo	Spanish	Non-white	Total
Total rate	206	81	139	188					
Urban	237	90	178	210					
Rural	129	18	83	108					
Migrant	150	57	85	129					
Non-migrant ...	144	52	112	128					

Females: (Age 65+)

	Anglo	Spanish	Non-white	Total
Total rate	155	65	86	141
Urban	186	57	99	158
Rural	89	67	55	82
Migrant	120	25	67	100
Non-migrant ..	114	47	61	98

chotic for the first time past the age of 65, the total rate for Anglo-Americans was highest, followed by the non-white and the Spanish-American last. The rate was higher for males than females in all 3 ethnic groups, but the rate among Anglo-American females was higher than for males in the other 2 ethnic groups, indicating that the Anglo-American group as a whole is much more strongly affected by whatever factors are operating to cause psychoses in later life.

The urban rate was higher for the sex-ethnic groupings than the rural rate, with one interesting exception. The Spanish-American female rate was higher in rural areas than in urban areas and the rural Spanish American female had a higher rate than the rural Spanish-American male. When rates were examined by migrant status it was found that the non-migrants had a very slightly lower rate than the migrants, with the exception of non-white males and Spanish-American females. In these 2 categories the non-migrant rate was appreciably higher than the migrant rate.

When the incidence was examined in terms of marital status (Table 2), certain significant differentials were found. The rates were generally lower for females than males in all categories. For both sexes the highest rates were for the divorced, followed in order by the separated, single, widowed, and finally married.

TABLE 2

ANNUAL ADJUSTED INCIDENCE RATES OF PSYCHOSES AGED 65 AND OLDER BY SEX, ETHNICITY, AND BY MARITAL STATUS, PER 100,000 POPULATION, TEXAS, 1951-1952

	Males: (Age 65+)				Females: (Age 65+)				
	Anglo	Spanish	Non-white	Total		Anglo	Spanish	Non-white	Total
Single	339	86	339	305					
Married	156	29	90	131					
Divorced	645	—	559	548					
Widowed	221	219	152	212					
Separated	386	39	161	392					

	Anglo	Spanish	Non-white	Total
Single	222	43	355	216
Married	158	39	44	127
Divorced	358	66	278	309
Widowed	138	89	61	121
Separated	262	33	282	293

When the ethnic groups are examined, considerably greater variation in the incidence of psychoses by marital status occurs. For the Anglo-Americans the rate for males is higher than for females for the single, divorced, widowed and separated, while the rates for the married are nearly identical. The Spanish-Americans, however, do not follow this same pattern. The rate for Spanish males is higher than for the females for the single and widowed, lower for the married and divorced, and about the same for the separated. The pattern again changes for the non-whites, with the non-white male exhibiting higher rates than the females for the married, divorced and widowed, and lower rates for the single and separated.

When the incidence is examined by occupational class, certain significant differentials are also found (Table 3). For the males, the highest incidence rates occur for manual workers, followed in order by the professionals and semi-professionals, agricultural, service, clerical and sales, and finally managerial, official and proprietary occupations. The pattern differs for the females, with the professional and semi-professionals showing the highest rate, followed by the service, manual work, clerical and sales, agricultural and lastly managerial, official and proprietary occupations. The males exhibited a higher rate than females in the managerial, official and proprietary, agricultural and manual

TABLE 3

ANNUAL ADJUSTED INCIDENCE RATES OF PSYCHOSES
 AGED 65 AND OLDER BY SEX, ETHNICITY, AND
 BY OCCUPATIONAL CLASS, PER 100,000
 POPULATION, TEXAS, 1951-1952

	Males: (Age 65+)			
	Anglo	Spanish	Non-white	Total
Professional and semi-professional	420	240	512	407
Managerial, official and proprietary	178	—	—	132
Clerical and sales	214	77	—	169
Service	192	53	236	178
Agricultural ...	417	80	218	347
Manual work ..	548	82	288	453
	Females: (Age 65+)			
	Anglo	Spanish	Non-white	Total
Professional and semi-professional	795	—	—	587
Managerial, official and proprietary	129	—	—	95
Clerical and sales	297	—	—	220
Service	635	49	447	534
Agricultural ...	151	—	126	128
Manual work ..	498	98	—	381

work occupations, and lower in the semi-professional, professional, clerical and sales and service occupations.

This latter pattern of differences between the sexes was followed by the Anglo-Americans. For the Spanish-Americans, the males were higher than the females in the professional and semi-professional, clerical and sales, and agricultural occupations, lower in only manual work occupations, and about the same for the managerial, official and proprietary and service occupations. The non-white males were higher than the females in the professional and semi-professional, agricultural and manual work occupations, lower in the service occupations, and the same for managerial, official and proprietary and clerical and sales occupations.

DISCUSSION

These differentials in incidence rates indicate that the distribution of psychoses after the age of 60 is not random or equal in the

population as would be expected if the primary etiology was anatomical or physiological. Instead the occurrence of psychoses in the later years of life seems to be intimately related to certain social factors, and the significance of these social factors seems to vary with cultural sub-groups. It is not possible, of course, to draw conclusions regarding etiology from epidemiological data. It is safe to say, however, that this epidemiological study furnishes evidence of the close relationship between social factors and mental illness in later life. For instance, the factors of ethnicity, as demonstrated by the singular incidence pattern of the Spanish-American female, and occupation, as indicated by the high rate among manual workers. This suggests that the change in status which occurs with aging is significant and that aging must be considered as a social process as well as a physical process.

The concept of "social aging" is based on the characteristic attitudes in our society toward the later years of life. It has been demonstrated that relatively well adjusted young people as well as young people evidencing severe maladjustment regard old age as the most unfavorable time of life(6, 21). Unlike some other societies, age is not assumed to have accrued wisdom and judgment to the individual, but is assumed to have caused him to be burdened with useless ideas, poor judgment, and the inability to contribute anything significant to his society. It is well to keep in mind that the older person not only is affected by these attitudes in others, but has this same attitude toward aging himself. There is a progressive decrease in physical stamina with aging which is experienced by the person as easy fatigability and a low energy level, and which makes it difficult for him to develop and maintain motivation(19). At the same time he has become more emotionally labile and finds it less easy to use defense mechanisms. He is not as capable of assimilating new learning and integrating new experience for later use(10). In addition the acuity of the special senses such as vision and hearing diminishes, and it is less easy to maintain contact and understanding in social situations. The individual is aware of these changes, and is usually as willing as are

others to regard them as the cause of his disturbed emotional state.

If the neuro-physiological aging process is regarded as a predisposing rather than as a precipitating factor in mental illness in later life, perhaps a more satisfactory explanation of these disorders can be achieved. If physical aging is regarded as increasing the individual's susceptibility then an investigation of the socio-environmental stress-processes in the terminal segment of the life cycle may contribute to a greater understanding of the so-called "old age psychoses."

Contemporary industrial-urban society has devalued the position of its elderly members. The family system has little or no place for them, reducing their sphere of significance to the two generations of parents and offspring. The economic institution seeks to eliminate its older workers through retirement at increasingly younger ages, rewarding its younger and more productive, competitive members. Consequently, the twilight phase of the human life-cycle is a period of stress, a socially induced situation for our elderly. This circumstance may be labeled as "forced dependency," wherein people who have been active and managed to survive to old age are now no longer allowed to be independent and productive.

If one views the social situation as a basis for recognizing personal identity, then an identity that is developed and sustained for the typical "three-score and ten" years may not prove satisfactory in adapting to the living conditions of old age. A high degree of autonomy and independence developed by providing a livelihood for self and possibly others, and a relatively fixed self-concept or identity hardened by a lengthy course of human experience might typically characterize many of those surviving to old age.

The older person, however, is faced with increasing social isolation, lack of occupational opportunity and loss of whatever status and prestige he might have had both occupationally and within the family. In short, the older person finds that his social role which may have been achieved in earlier years at the cost of considerable anxiety, strenuous effort and the sacrifice of personal pleasure has now become obsolete. He has outlived his mode of usefulness to self and

others, and to survive must attempt to establish a new role identity. This "role obsolescence" occurs when the individual has lost an appreciable amount of his biological resources, in a society which is willing to accept him as a burden but not as an equal.

Any ensuing psychiatric disorder may thus be the resultant of a sequence of unsuccessful attempts to cope with the effects of being old and may exhibit any one or a combination of 3 major components: 1. a withdrawal and insulation from a society in which they are experiencing a loss of personal identity, 2. a distortion of reality in an attempt to regain or maintain identity, 3. self depreciation in response to their apparent lack of significance and worth.

SUMMARY AND CONCLUSIONS

1. Recent and more refined epidemiologic data indicate that the incidence of functional psychoses in the elderly population is much higher than earlier studies have indicated.
2. Analysis of the epidemiologic data indicates that there is a close relationship between certain social factors and the incidence of mental illness in later life.
3. Evidence presented here and in previous research reports which are cited are interpreted to suggest that "social aging" is at least as significant as physical aging in the occurrence of mental illness in later life.
4. The concept of "forced dependency" is suggested to describe the attempts of society to relegate its independent and autonomous elderly members to a secondary status. "Role obsolescence" is suggested as describing the characteristic fate of the elderly person who has outlived his mode of usefulness to self and others. The reaction to this obsolescent dependent state with its loss of personal identity is suggested as a major source of behavior pathology in the aged individual.
5. The conclusion seems to be warranted that a functional illness characterized by depressed mood is as typical or more typical of mental illness in this age period than is an illness characterized by a chronic brain syndrome. The possibility of a functional form of senility in addition to the more commonly recognized organic pathology might also be considered in investigating the psychiatric disorders of the aged.

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DISCUSSION

JACK SHEPS, M. D. (New York 29, N. Y.)—Drs. Williams and Jaco have presented definite evidence against the importance ascribed to organic

factors in the emotional disorders of the aged. Organic factors are partially determining, and I feel that too much weight has been given them in considering on what bio-social level an individual can function without symptoms. The degree and extent of mental activity are determined by the amount of cerebral dysfunction. The degree and extent of optimum physical activity are determined by physical function. However, the older age group usually can make their own adjustments if they can accept the social setting—the most crucial change in old age—so well detailed in this thoughtful and well organized paper.

In my opinion, enforced dependency and the consequent change in social role from the provider to the one being provided for is the major causative factor in emotional disorders of the aged. Consequent fear and rage often throw a fairly well functioning but decompensated brain into senile confusion or a paranoid reaction.

Weinstein and Kahn have described this effect on the psychotic symptoms of patients with brain tumors, and I have seen the same reaction in patients with senile psychoses. Depression and severe neurotic reactions also have their etiology in the forced dependency situation and the patient's inability to accept it.

The authors have described persons over 65 and their reaction to change of social role without mentioning the important intermediate group—the family. We are so accustomed to seeing our patients in institutions and outpatient departments of large hospitals without relatives, or deserted by them, that we are too prone to ascribe this to sociological changes. Closer inquiry, however, often reveals character disorders of such marked degree that no warm, affectionate, personal relationship ever existed for these people but only a coercive, domineering or clinging dependency. The pathology of their family relationships has been severe, and as soon as the very dependent children or relatives died, the remaining ones who did not have to tolerate such a demanding object-relationship abandoned the patient.

Often we see a disruption of the family equilibrium as the role of our patient changes from parent-in-fact to parent-in-name. Both the children and the patient fight against accepting this reversal of role and the forced dependency. Even the practical difficulties involved are often a defense against facing their parent as a helpless person for whom they have to provide. Therapy is done with the family by having all significant members learn to accept the parent's limitations of function and change of role. This nearly always results in great relief of anxiety on the part of all concerned and consequent diminution of symptoms.

The rush to institutionalize the aged parent is a manifestation of avoidance to accept the patient as he is and to understand his emotional needs. Working with the family is stressed because of the very poor survival rate of the senile patient in mental institutions. Actually, the dependency of old age is the same as in childhood and, in my opinion, the same principles of therapy apply.

DISCUSSION

KARL STERN, M.D. (Montreal, Canada).—During our work in the Old Age Counselling Center in Montreal, we were struck by the fact that senility in the sense of organic cerebral impairment played among our clientele a trivial rôle compared with functional affective disorders, character disorders, which for certain reasons were accentuated during old age, and difficulties of adjustment to retirement etc. However, our material was selective—namely ambulant clients, mainly of social welfare organizations. It is much more surprising to see that even among hospitalized patients of the higher age group the functional element is so preponderant over the organic senile and vascular. This brings to mind the statement by Grünthal that in the pathology of senile psychoses there is no absolute relationship between the degree of anatomical change and that of the psychotic manifestations. In the German literature there are scattered observations on senile brains in which a retrospect investigation of the patient's life history showed no signs of senile psychosis. All this becomes more interesting in the light of the present observations by Drs. Williams and Jaco, on the fact that there is no simple cause-effect relationship between morbid anatomy and psychosis, and about the importance of the functional element.

Incidentally, this observation may extend even to certain neurological disorders of old age. Spatz in his studies on the extrapyramidal system claims that those vascular lesions described by Pierre Marie in connection with arteriosclerotic Parkinsonism (*état crible*, *état lacunaire* of the basal ganglia and the lower brain stem) can be found in control brains of old people who during life showed no extra-pyramidal symptoms. If this is true it can be explained only in two possible ways: either these lesions have no clinical neurological significance, or here, too, a second factor enters into the mechanism. Since Spatz made his statement without statistical details, these things need careful systematic re-investigation.

There are several ways in which the organic and the functional are combined in the psychoses of old age. There is, first, the senile, i.e. organic disturbance with a functional superstructure—what one commonly calls a depressive or a paranoid "coloring" of senile dementia. In these cases Bleuler and others felt that the organic process mobilizes latent functional disorders and caricatures pre-existing

features of the personality. In the light of the present paper one wonders if the causal relationship is as simple as that. There is no doubt that the affective element has an influence on the organic process. In our study on grief reactions in the aged we described a case of true senile psychosis in the organic sense which was suddenly precipitated by bereavement. Old age is the time of loss par excellence and it seemed to us that grief manifests itself during that phase under the most extraordinary guises.

The question of the influence of the affective element on the organic process presents itself also in Kral's observation on the older inmates of Theresienstadt concentration camp. Kral found there a surprisingly great number of organic psychoses and a comparatively small incidence of affective disorders, even of reactive depression. That this should be entirely due to malnutrition is not at all proved. From our observations on grief it seems quite possible that there is such a thing as organic cerebral deterioration under the impact of psychogenic factors.

From a psychoanalytical point of view it is noteworthy that features of anal regression (hoarding, parsimoniousness, paranoid suspicion) seem to be more frequently associated with organic cerebral disease than features of oral regression. Among our cases, the "oral," over-talkative patient, who shows an undue need for dependance, reassurance, medical prescription etc. seemed more intact in his organic cerebral function.

Dr. Williams' and Dr. Jaco's paper is most interesting as far as the social and cultural implications are concerned. I should like to ask whether the lower percentage of senile conditions among the Spanish-speaking population might not be due to the fact in Latin families invalid old people are kept at home longer and are not as readily hospitalized as in Anglo-American families. This is, at least the impression we had from our clinical experience. The same factor may enter into the difference between rural and urban population. In a rural civilization, old age means dignity and wisdom. The world literature, all the way from the Bible to Tolstoy, gives beautiful examples of that. To me it is almost symbolic that the first outstanding example of senile persons in a rural setting affected by unfavorable change is in the story of farmers who become uprooted in a technocratic society; I have here in mind the unforgettable image of the grandparents in John Steinbeck's "The Grapes of Wrath."

BEHAVIORAL CHANGES IN NONPSYCHOTIC VOLUNTEERS FOLLOWING THE ADMINISTRATION OF TARAXEIN, THE SUBSTANCE OBTAINED FROM SERUM OF SCHIZOPHRENIC PATIENTS^{1, 2}

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MATTHEW COHEN, AND CHARLES A. FEIGLEY, M.D.

In previous presentations (1, 2) we have described the behavioral effects resulting from the administration of taraxein to human volunteers. In this report we will describe our results with a larger series of volunteers in which additional control experiments were conducted.⁵ Other studies which we have conducted in an effort to gain more understanding of the nature of this substance also will be presented.

We now have administered taraxein to 20 human volunteers: 15 were inmates of the Louisiana State Penitentiary at Angola; 3 were schizophrenic patients in remission; the other 2 were nonpsychotic volunteers other than the prison population. The non-psychotics were screened and only those with a negative history of mental disease in themselves and their families were selected. In every study the dose administered was the amount of taraxein that could be extracted from 400 ml. of schizophrenic serum. The total amount of solution varied from 1½ to 5 mls. It was injected rapidly intravenously. To control effects of suggestion, all experiments were carried out as double-blind studies with several different control substances being used. Control injections included a fraction processed from normal serum by the same procedure employed for

extracting taraxein from schizophrenic serum, ceruloplasmin, normal saline and sodium amytal. In no instance did a volunteer react with psychotic symptoms to substances other than taraxein.

The clinical effects in this larger series were of the same nature as previously presented (1, 2). All subjects developed symptoms which have been described for schizophrenia. Primary or fundamental symptoms appeared consistently. Blocking and thought depravation developed; all were autistic and complained of depersonalization. They appeared dazed with diminished contact to the environment; had a blank look in their eyes; and showed a lessening of animation in facial expression. These primary or fundamental symptoms appeared first. They were the most consistent and developed even with the administration of taraxein which had given minimal activity by animal assay. Each of the classical secondary symptoms appeared in one or more of the test subjects. The symptoms displayed have included catatonic stupor and excitement, hebephrenia, referential ideas, delusions of persecution, grandiosity and auditory hallucinations. None of the test group has displayed visual hallucinations or shown changes in autonomic nervous system so characteristic of the D-LSD-25 reaction. The reactions in the 3 schizophrenic subjects in remission have been slightly different from those with the nonpsychotic volunteers. One of the 3 was given a very active dose of taraxein. He developed a quite intense reaction which was much more prolonged than in the nonpsychotics, lasting 4 days instead of the usual 1 to 2 hours. The other schizophrenics in remission were each given a weak dose of taraxein. This dose had produced only very mild primary symptoms for a short period in a nonpsychotic volunteer. With the schizophrenics, however, it produced a defi-

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⁵ The authors wish to express appreciation to Warden Maurice H. Sigler of Louisiana State Penitentiary at Angola for making arrangements to conduct the experiments with human volunteers, and to all those inmates of the Penitentiary who volunteered for the experiments.

nite reaction with secondary symptoms, suggesting that remitted schizophrenics were more sensitive to taraxein than nonpsychotics. Since the symptoms displayed by individual volunteers have been described in some detail in earlier papers (1, 2), we shall not elaborate further on specific symptomatology.

Since our initial studies with taraxein we have pondered the problem as to whether the taraxein itself actually circulates in the serum of schizophrenic patients or whether schizophrenic serum contains a type of precursor or "taraxeinogen" which can be activated into taraxein by our processing procedure. Since we have never been able to extract taraxein from normal serum, it has been our concept that at least a precursor was present specifically in schizophrenics. To test this hypothesis, we injected rapidly 450 ml. of schizophrenic plasma (500 ml. of solution including citrate) on 4 occasions into each of 4 nonpsychotic prisoner volunteers. To control this study, the same amount of plasma obtained from nonpsychotic donors was injected at the same rate of speed into nonpsychotic prisoner volunteers. All subjects were in excellent physical condition and under the age of 25 years.

The plasma was obtained by utilizing the routine transfusion bottles with 50 ml. of citrate for each 450 ml. of blood. After centrifugation, the plasma was drawn off, sterile precautions being taken for each step in the procedure. Prior to the rapid injection, 500 ml. of blood were withdrawn from each of the volunteer recipients utilizing the Cutter blood drawing sets. For rapid injection of the plasma, the routine transfusion apparatus was used. The infusion of saline was first started through a #15 needle. This was then stopped and simultaneously the infusion of plasma begun. An auxiliary hand pump was attached to the bottle of plasma which made it possible to transfuse the 500 ml. of solution into the antecubital vein in less than 4 minutes. The actual time consumed for the volunteers to receive 500 milliliters of the schizophrenic plasma was 3½ minutes, 3½ minutes, 2 minutes and 2½ minutes; for the normal plasma, 2 minutes and 3½ minutes. The subjects were in a semi-sitting position, the body actually being

at approximately a 45 degree angle. Cuffs were placed on the thighs so that return circulation from the legs could be shut off as a precautionary measure. The cuffs, however, were not used since no observable jugular distension developed. Some physical symptoms resulted from this rapid injection. All 6 volunteers complained of at least a slight degree of constriction about the chest. Three of the 6 developed a marked bradycardia. The greatest dip in pulse rate was to 40 per minute. Two subjects complained of feeling faint. The physical symptoms subsided within a few seconds after completion of the transfusion.

The 4 volunteers receiving plasma from schizophrenics developed symptoms, described as characteristic of schizophrenia, which persisted for 15 to 45 minutes. The reactions were not intense. However, all showed lessening in facial animation; all described symptoms of depersonalization, blocking and thought deprivation. One showed a mild degree of posturing. Although the reactions were quite mild without clear-cut secondary symptoms, they were all definite. The 2 subjects receiving plasma from nonpsychotic donors showed no mental aberrations.

There are several factors to consider in comparing these results with those obtained with the administration of the taraxein fraction. Even though the transfusions were extremely rapid, the time consumed was still much longer than that consumed in the injection of taraxein. Therefore, it seems likely that concentration in the blood would be considerably lower. On occasion we have administered slowly (consuming the amount of time taken for the transfusion) known active taraxein to a monkey and it has not produced the clinical and EEG effects characteristic of the rapid injection. It is obvious that the numerous steps involved in the processing of taraxein must be associated with some loss of the active substance. It is probable that the rapid injection of a small amount of substance is responsible for the more intense clinical reaction with the taraxein itself as compared with the plasma. The experiments suggest that the substance we have extracted and called taraxein is present in that form in serum. However, in view

of the more intense reaction with the taraxein concentrate, we are not absolutely certain that in addition to isolating a purer fraction we are not also activating a precursor with our processing procedure.

We have been interested in determining whether or not certain chemical compounds known to either induce or relieve psychotic symptoms might do so by acting on the taraxein fraction. We have conducted two studies to investigate this problem. The first study was previously reported and involved medical student volunteers to whom we administered D-LSD-25 in quantities sufficient to induce psychotic symptoms. In that experiment we drew blood before and at the peak of the LSD reaction and processed the serum for taraxein. We did not obtain taraxein from either batch. This suggested that the behavioral reactions induced by LSD were not associated with the same chemical mechanism as that present in endogenous schizophrenia. In the second study we conducted experiments to determine if Thorazine alters the taraxein activity. In this experiment we drew blood and processed the serum from patients who had been receiving significant doses of Thorazine over prolonged periods. Along with this, blood was similarly drawn, and the serum processed, from psychotic schizophrenic patients not on drug therapy. The two batches were processed alongside one another. When tested in monkeys with chronically implanted electrodes in the manner of our standard assay, the two batches were equally active. This experiment suggested that Thorazine does not act on taraxein in the serum.

SUMMARY

Our studies concerned with the clinical effects of the administration of taraxein, a protein isolated from the serum of schizophrenic patients and not obtained from normal serum through our processing procedure, are summarized. In addition, we reported studies which suggest that this substance apparently is present in whole serum and is not a product activated through our processing procedure. One study concerned with the attempt to isolate taraxein following the administration of D-LSD-25 and a study de-

scribing the isolation of taraxein from patients receiving Thorazine were described. These experiments suggested that the LSD psychoses do not result from the formation of taraxein in nonpsychotic volunteers and that Thorazine does not produce clinical improvement by destroying or reducing levels of taraxein.

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DISCUSSION

Douglas D. Bond, M. D. (Cleveland, Ohio).—In the last few years, Dr. Heath and his group have provided a great stimulus to research into the biological causes of schizophrenia. Last year, Dr. Heath made a dramatic announcement that a protein fraction from the blood of schizophrenic patients produced psychotic behavior in non-psychotic subjects. This year, they have extended the number of their experiments and have added further controls. This paper reports the extension of the major findings from three to twenty-one subjects; purports to show that three schizophrenic patients in remission are unusually sensitive to their protein fraction, and that rapid transfusions of 500 cc of citrated plasma from schizophrenic patients to normal volunteers produce transient changes in behavior and thinking that the authors identify with schizophrenia.

A discussant of this work has a hard job; on the one hand, one can but admire the great energy, enthusiasm and hard work of this group; on the other hand, one cannot help but be critical of some of the form and content of these presentations. These presentations have been unstable for not reporting the method. For instance, in this paper no method for the extraction of taraxein is given, nor is any available reference quoted, only two unpublished papers. This to me is a serious error. Results and method should go together, if encouragement is to be given to open scientific inquiry.

Second, there seems to me to be a lack of desirable caution in the clinical reporting. Words long identified with chronic clinical syndromes are used as descriptive words for transient phenomena. Simple descriptions of the patients' behavior would have better conveyed the authors' meaning and not run the danger of putting conclusions into primary observations.

The most critical new work is the transfusion into non-psychotic volunteers of unprocessed plasma from schizophrenic patients. The authors clearly delineate method here, and open for others a simple way to test the hypothesis that a factor exists in the blood of schizophrenics which produces mental symptoms when transfused into normal subjects. Plasma from normal subjects did not produce such effects. The transfusions were very rapid and were made under pressure, because of the belief that the toxic substance would be quickly destroyed. The procedure is a heroic one and I for one, would be more content, were the number of positive results more than four, and the number of controls more than two. I would like to know also, which patients suffered the severe bradycardia and circulatory embarrassment reported. Were the controls the least or most affected in this way? The answer to this question might well change one's weighting of the evidence.

In summary, this work is provocative and stimulating, but the critical controls are yet to be done.

DISCUSSION

KATHLEEN SMITH, M. D. (St. Louis, Mo).—That elusive abnormal metabolite in schizophrenia has attracted most of us at one time or another. In the height of my enthusiasm two years ago I tried injecting 1000 cc. of whole blood from a mute waxy catatonic schizophrenic into a terminal cancer patient, but produced no mental symptoms. A method for concentrating the material seemed the next step.

The findings of Dr. Heath and his coworkers stimulated members of the department of psychiatry at Washington University School of Medicine in St. Louis to visit the New Orleans group and learn to prepare "taraxein." Enough material was prepared to inject 5 volunteer prisoners with "taraxein," 4 with extract from normal serum, and 8 with saline

placebo. Observations were by double blind technique and 4 subjects served as their own controls. None exhibited either the primary or secondary symptoms described by Bleuler.

In only 3 instances was any change noted, other than anxiety. A subject receiving saline reported that he felt a little different in the stomach, was warm about the eyes, and had an expanding feeling of warmth. When his arm was raised and placed in a cramped position, he maintained the posture for several minutes before, during and after the experiment, because he thought it "was part of the experiment." Several markedly cooperative prisoners showed this "pseudo-waxy-flexibility." The subject receiving normal serum extract held his arm aloft in a similar manner. Before injection he asked if we were doctors in training or real doctors and discussed his interest in hypnotism and Bridey Murphy. He compared the needle to a railroad spike. After injection he noted numbness in the chest, dizziness, lightheadedness, a floating feeling, and remarked that his steps seemed extra large and required no effort. The subject receiving extract from schizophrenic serum showed "pseudo-waxy-flexibility." At 1½ minutes after injection, he noticed the green paint on the wall. At 16 minutes he expressed disappointment that "nothing had happened." At 1½ hours he was concerned about how much he had talked to us, and said it was wise to keep a close mouth at prisons. He said that some prisoners in the hall were "bad ones." This reaction suggested paranoid content, but was discounted when we later found that another prisoner received twice the dose of the same "taraxein" that same day without any reaction whatsoever. These 3 examples hint at the difficulty in evaluating the responses obtained.

The prospect of finding an abnormal metabolite in schizophrenic serum is an exciting one and Dr. Heath is to be commended for his direct attack on the problem.

THE "DOUBLE BLIND" METHOD: ITS PITFALLS AND FALLACIES

WERNER TUTEUR, M.D.¹

With the advent of an ever increasing number of so-called tranquilizing drugs, this method has recently been used by clinical investigators to a degree that an assessment seems mandatory.

"Double blind" is a jargon expression which should be replaced by "controlled." The origin of the method and its first use are difficult to trace. It probably developed as a matter of course as the need for exactness and reliability in clinical investigations made itself felt. It has been subject to many variations. Hill(1) stated that uncontrolled studies may, through play of chance, give a favorable picture in the hands of one physician, and an unfavorable one in the hands of the second. Greiner, *et al.*(2) warn of the innate enthusiasm with which every investigator approaches a research project and interprets it. Thus medical journals "euphemistically called literature" may be cluttered up with conflicting reports(1).

While the purpose of the method is to test the efficacy of a given drug, unbeknown to patient, attending personnel and clinical investigator, on a homogenous group of patients showing similar symptoms, in reality there are two drugs under investigation, the compound to be tested and the placebo. The active compound is thus "compared" with the effects of an inert compound. At no time are the participants of the study to know *which* compound is being administered. This is usually performed with the help of a code system which lends itself to an infinite number of variants. Thus the illusion is maintained. Once the code is broken at the termination of the study, "objective" findings are expected to be forthcoming.

Greiner, *et al.*(2) stress the necessity of describing the symptoms which are expected to improve prior to the study and he selects his patients accordingly and homogeneously. These symptoms are also called by other investigators "target symptoms"(7). He states that the "double blind" method is not safe

from error and that the hazards are greater in the study of symptoms that are vague and not easily defined. Hill is aware of the difficulties in assessing X-rays. Should the result of a study be based on such findings, he admits that the final assessment of clinical findings of physical illness is still more difficult even with the "double blind" method. No doubt, were he to evaluate psychiatric illness and patients, he would face even greater difficulties, since measurement of psychiatric symptomatology remains inadequate and subject to individual interpretation. Yet judgment must be made without any possibility of bias, without any overcompensation for a possible bias, and without any possibility of accusation of possible bias. Hill considers this at times impossible(1).

Ethical concepts enter any clinical investigation, especially "double blind" studies. For obvious reasons one would not for weeks inject an inert solution into a patient's veins merely for the sake of comparison. Neither would one withhold a life saving active compound from a patient where even the slightest possibility of improvement with it is apparent. To have psychiatric patients continue uncontrolled toilet habits on placebos, have them act out in a destructive manner towards others, themselves and equipment while remedies for this behavior are available, is contrary to medical concepts. Such measures have become extremely demoralizing to patients and attending personnel in our experience, resulting in statements to the effect that the "drug" (placebo) was making the patients "worse." This observation no doubt may be true, considering the fact that while on placebos the patient is not receiving any pharmacological treatment(3, 4, 5, 6).

Greiner(2) stresses the absolute necessity that the compound under investigation and the placebo must have identical appearance and *taste*. The latter is of the greatest practical importance in disturbed psychiatric patients who will not or cannot swallow a given capsule and for whom it has to be dissolved

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in a liquid vehicle. Frequently placebos received for "double blind" studies do not comply with this latter requirement, resulting very soon in the fact that patients, regardless of their degree of disturbance, complain bitterly that the "sweet" medicine (placebo) was not helping them at all, in contrast to the "bitter" or "tasteless," which represented the active compound. A most carefully planned and most conscientiously carried out study may collapse under such circumstances. Attending personnel do their part in tasting every capsule or tablet given to them for distribution to patients by staging so-called "pill parties" (3, 4, 5, 6).

In a recent panel on "placebos" held at the University of Illinois(8), one of the participants (W. S. Wood) made the pertinent statement that side effects occurring during a study make the drug and placebo groups obvious, a statement which can be readily confirmed. There remains, of course, always the possibility that certain "side effects" may occur on placebos, when such symptoms as parkinsonism, jaundice or amenorrhea, to mention only a few, have an etiology entirely unconnected with the compounds under study. These are rare exceptions, whereas the revealing of the groups due to true side effects render the study almost worthless from the "double blind" angle. Spontaneous remissions occurring on placebos are frequently interpreted as "placebo reactions." For practical purposes the two are frequently indistinguishable.

Hill(1) postulates that even without the "double blind" controls an effective treatment will not fail to come to light. Retrospectively, he feels that long drawn out controlled studies, as they were performed after the introduction of such "winners" as penicillin, now appear pedantic. On the other hand, he concludes, and any experienced and conscientious investigator will agree with him, that the "statistically guided therapeutic trial" (double blind method) is *not the only* means of investigation, nor that it is the best way in advancing knowledge of therapeutics. It is recommended as *one* way, but not the universal one.

Our own comments restrict themselves to

a warning that even under the most careful "double blind" conditions the results of clinico-pharmaceutical studies may still be inaccurate and at times even misleading.

SUMMARY

A critical review of the so-called "double blind" study reveals pitfalls, fallacies and inadequacies of this method of investigation which in the past has created an unwarranted security in many investigators. The "worsening" of patients' conditions while on placebos is demoralizing to patients and personnel and the ethics of such a procedure in a patient who is in dire need of active treatment can be questioned. It is imperative that the compound under investigation and the placebo have identical appearance and taste, since even disturbed patients, in our experience, are able to differentiate the two drugs by it, thus jeopardizing the most carefully planned and conscientiously carried out project. Side effects occurring on the active compound reveal the identity of the active and inert drug group.

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CONTEMPORARY PSYCHIATRY IN PORTUGAL¹

HENRIQUE J. DE BARAHONA FERNANDES, M.D.²

I feel it is a great honour to speak at this meeting and on behalf of the Portuguese Society of Neurology and Psychiatry, I wish to pay a sincere tribute to the psychiatric progress in your country.

The possibilities of research in a country as small as Portugal are rather limited. Besides the results obtained by individual researches, we would like to contribute to the cooperation amongst psychiatrists of different countries with some points of view that facilitate mutual understanding.

Portugal is situated on the most occidental point of Europe, open to the Atlantic and every world contact. From olden times it has developed a spirit of human understanding between people of different countries and races. This position is shown in psychiatry by an accessibility to the most varied currents of research and by the attempt at a theoretical synthesis, directed to sound knowledge and to practical results. We maintain a close connection with traditional psychiatry of the countries of central Europe. We are however interested and openminded to the American dynamic and psychotherapeutic currents and to mental hygiene.

Our greatest contribution to modern psychiatry was the leucotomy, discovered by Egas Moniz in 1936. At the same time were developed in our country the shock treatments and the several methods of psychological treatment from occupational therapy to psychoanalysis. Our personal experience with these several methods led us to a structural analysis of mental diseases that tries to integrate the psychological and social dynamics on their neuro-physiological basis and heredobiological constitution.

Since the opening in Lisbon, in 1942, of the Julio de Matos Hospital, there has been an active effort to better hospital treatment, especially regarding no restraint, nursing, oc-

cupational treatment and social work. In 1945 a new law on mental diseases, made legal regulations for voluntary admission clinics for treatment of acute cases, out-patient services, and dispensaries of mental hygiene, etc.

The teaching of psychiatry in the Portuguese faculties of Medicine, began in 1911, and has been well developed with practical demonstrations, since 1955 together with lectures on psychology in the third medical year. In the university general hospitals there are psychiatric units for acute patients, neurosis and psychosomatic patients. The so-called "day hospital" and extrafamily nursing are under trial.

The interest in psychiatry has grown very much, since the war, in both students and doctors. Psychiatric careers have favourable conditions in private practice and the number of specialists has grown in the last 20 years from less than 20 to almost 100.

Since 1539 religious institutes for the care of mental patients have existed in Lisbon. The Portuguese Saint, João de Deus, in the 16th century, considered them sick people, and founded the humane basis of their treatment. In 1848 the first state hospital for mental patients was opened (Rilhafoles, now Hospital Bombarda) and since then psychiatrists have sought better conditions for the treatment of mental diseases. The 6 state hospitals and 15 private hospitals with 7,342 beds and 4,685 annual admissions, are insufficient for the 8 million population.

We do not have very different clinical problems from those of other European countries, still in the phase of industrialization. The human problems are conditioned by the Catholic tradition of the country, but in great cities there is a rapid development of new cultural trends and we are observing all the varieties of mental reactions.

Worthy of note is the high percentage of affective conditions (24.3% of admissions in Julio de Matos hospital) and symptomatic psychoses (6.5%) in somatic diseases. General paresis is decreasing especially in men (4.5%); senile psychosis is treated in charity asylums or in the home, this being

¹ Read at the 113th annual meeting of The American Psychiatric Association, Chicago, Ill., May 13-17, 1957.

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due to the strong family ties. Though we are a wine producing country, alcoholic psychoses are not frequent but are increasing.

The interest for the personal case and its individual treatment led us not to put aside its reference to well defined nosological and clinical entities. We accept the classical distinction between psychopathic personalities, psychogenic and neurotic reactions, and mental diseases (psychoses). In psychosis with unknown etiology (constitutional psychosis) with diagnosis, intermediary to cyclothymia and schizophrenia, a clinical entity with a good prognosis—the cycloid psychosis of Kleist and Leonhard (that we propose to call holodisphrenia). They are acute syndromes (confusional, incoherent, akinetic and hyperkinetic, twilight, delirious, etc.), similar to the clinical pictures of toxic, organic and symptomatic psychosis and of epilepsy. After each attack there is total recovery and a tendency to periodic relapse. The symptoms with schizophrenic aspect manifest themselves on the basis of a global alteration of consciousness, and of the activity and formal structure of thought process. They have marked vegetative and metabolic symptoms and they respond very well to shock treatment and neuroleptics, though with oscillations and relapses. Its structural analysis made by Polonio shows a convergence of constitutional exogenous and psychogenic factors, different from schizophrenia.

We use a multi-dimensional clinical analysis that allows us to integrate biographic and social understanding with bio-organic and constitutional explanations.⁸ It has seemed to us ever since the introduction of the new physical treatments, that their incidence in the development of illness could give us a better knowledge of its structure.

With our collaborators Polonio, Sousa Gomes, we studied the therapeutic effect of ECT, insulin treatment and especially leucotomy. Already in 1944, such an analysis demonstrated that the therapeutic action of physical methods and leucotomy seems to have no bearing on the aetiological causes of the psychosis. The same factors of favourable or unfavourable prognosis for

spontaneous evolution, such as environment, constitution, personality, the acute or insidious onset, the tendency to recovery, fluctuations or progressive deterioration have the same importance in the case of therapeutic recovery.

They are effective on the nonspecific symptoms of several nosological entities. Schizophrenic deterioration as well as the tendency to the periodic development of manic-depressive psychosis are not materially affected by them.

In a study by Polonio of 250 patients treated by insulin compared with 250 controls, it could be seen that the action of insulin is predominantly somatic, increasing powers of bodily resistance to the disease in a way similar to the protective action of pyknic body build against the predisposition to schizophrenia. Syntonic personalities with good emotional tension do best on all these methods of treatment. The action of leucotomy depends largely on the patient's personality and the degree of preservation.

In other studies on structural analysis of mental diseases done in our clinic it could be seen that the favourable or unfavourable development of psychosis depends on the several constitutional and exogenous factors. It could be seen that in schizophrenia, manic-depressive, cycloid and puerperal psychosis, psychogenic factors have not the outstanding pathogenic role that is now so frequently ascribed to them. In exogenous psychosis, constitutional factors are also active, in a way similar to their effect on endogenous psychosis. For instance, Mendes, in 507 cases of exogenous psychosis, found a positive family history of mental disease in 46.9% of the patients.

Such clinical experience has led us to a particular type of treatment. Let us take as example leucotomy: the surgical operation by itself is not enough, it is necessary to follow it with rehabilitation and psychotherapy. As we have shown in the first International Psychiatric Congress in Paris, leucotomy determines a regressive behaviour and a syntonyzation with environment. We established a relationship of the altered fronto-orbitothalamic integrations and the interoceptive activity of personality (regres-

⁸ In the field of child psychiatry we refer to the research of V. Fontes, Y. Santos, and in other areas to L. Pina, D. Furtado, S. Diniz, L. Sociro *et al.*

sion) and better cortical integration of exteroceptive activity (syntonization).

The decrease of inner tension and increased extraversion facilitate rapport with the doctor and interpersonal relations. Psychosurgery creates, in this way, a new basis of transference for psychotherapy and rehabilitation. The same happens with electroshock and insulin treatment which allows better rapport and psychotherapy. We have also observed this in the acetylcholin treatment of obsessive and anxiety neuroses.

The vagal crises with vaso-dilatation and anxiety, due to the acetylcholin shock, creates a biodynamic situation that conditions new interpersonal relations between the patient and the doctor. This situation makes for an easier actual and consecutive psychotherapy. We propose to call this mechanism *vital transference*. It is an application of psychoanalytic concepts to a situation with biological basis. The physical treatments change the cerebral function and behaviour reactions in a way that makes for a transfer of the patient's affect to the doctor—the basis of every psychological and educative action. Vital transference acts at a deeper level (biologically) than the transference of psychotherapy. It is the instinctive-affective level called *vital* that includes the basic functions of personality and not psychogenic and reactive structures. It is set in motion by physical effects (synthonization actions and others) due to treatments (surgical treatment, shock, drugs, etc.) and not to symbolic values.

Vital transference is referred to the *actual* therapeutic situation; it may be a basis for suggestive support and educative treatment. With the sequence of treatment made easier, *par example*, by the biological regression due to leucotomy, the vital transference may assume a symbolic meaning in relation to the childhood life. It may then make for an easier application of psychotherapy.

The recent introduction of neuroleptics and tranquilizers, places this problem in an acute form. We will not discuss it now, only to say that there is no reason for any supremacy fight between pharmacotherapy

and psychotherapy. We do feel these drugs should be used in conjunction with the psychological education and social orientation of the patient.

Our experience shows that their tranquilizing effect can be pleasant or unpleasant and it facilitates either negative or positive transference. The pharmacological action has therefore to be amplified to the psychological and social level. And also, if I may be allowed to add, at the spiritual level—the sense of existence given to life of the individual.

These brief indications suggest that Portuguese psychiatrists seem to approach psychiatric problems in a global perspective. We refuse however, to extrapolate the meaning and the results of a single theory or of a single method of research. None of the actual psychiatric currents, psychoanalytic, cybernetic, reflexological, behaviourist, phenomenological, existentialist or any other is preponderant with us. We attempt to understand integral man structured in the different levels and categories of the real (N. Hartmann).

Research has to be partial and analytic. We must not, however, forget each other level and structure nor lose reference to the totality.

We would like to collaborate with great countries such as the U.S.A., in the *synthesis* of the several branches of research; at least, as we have proposed since 1936, in the "convergence" of cerebral anatoprophysiology and psychopathology in the structural analysis of psychosis and treatment results, under a multiple approach—constitutional, biological, psychodynamic and cultural.

Besides clinical psychiatry, the possibilities of research in Portugal are scarce. The "Centro de Estudos Egas Moniz" seeks to enlarge the basis of research in neurology and psychiatry in the directions referred to; that is to use many of the available methods of scientific research for a better knowledge of healthy and ill men, on the basis of natural science, integrated in a medical humanistic anthropology.

A NOTE ON PSYCHIATRIC DEVELOPMENTS IN THE SAN FRANCISCO BAY AREA

PORIA BELL HUME, M.D.¹

INTRODUCTION

During the past twenty years, since The American Psychiatric Association last met in San Francisco, there have been four major developments affecting psychiatric services and facilities throughout the State, particularly in the Bay Area. These developments are closely inter-related and comprise (a) the unprecedented increase since World War II in the number of psychiatrists practising in California; (b) the expansion of training and research facilities; (c) the improved state programs within the mental hospitals, along with the establishment of extramural services; and (d) the development of local mental health services through the National Mental Health Act of 1946 and through California's Community Mental Health Services Act of 1957 (known as the Short-Doyle Act) which provides state aid to cities and counties.

Many of the developments to be briefly described in this paper were foreshadowed on the occasion of the 1938 annual meeting in San Francisco, when Dr. Margaret H. Smyth, then Superintendent of the Stockton State Hospital and recently deceased, wrote in the March, 1938 issue of the JOURNAL as follows, when expressing her prophetic concept of a state hospital program:

... The hospital at Stockton carries on a definite program of distributing mental hygiene information in the way of out-patient clinics, parole clinics, juvenile court and child guidance examinations. In all these extra-mural activities is stressed the concept of mental hygiene which seeks to build up sound mental health prevent and cure mental disease. . . . The out-patient clinics for the patients who are home on parole are held in six counties where the patients are invited to meet at the health center in densely populated districts. Two clinics are held in each county annually. The counties other than San Joaquin which are served in this manner are San Francisco, Alameda, Stanislaus, Fresno and Sacramento counties. Patients from adjacent counties are invited also to attend these

clinics and often they come from great distances, as much as one hundred miles in some cases. The mental hygiene clinic is not only a great blessing to the community but also presents an opportunity for the superintendent and medical staff of the hospital to be brought in contact with early personality changes and beginning mental disorders for which prevention and early treatment are possible . . . (1)

PSYCHIATRISTS IN THE BAY AREA

In 1957, 11% of the membership of The American Psychiatric Association were found to be practising in California as compared with 100 members in 1943 and with 712 in 1952(2). Out of a total California membership of 1,066 in 1957, there were 277 from the Bay Area and 60 from San Francisco alone. In the East Bay area, which includes the cities of Oakland, Berkeley, Richmond, and Alameda, there were no more than 6 psychiatrists two decades ago; there are now close to a hundred psychiatrists in the two East Bay counties of Alameda and Contra Costa(3).

The Northern California Psychiatric Society, established in 1954 as one of three district branches of The American Psychiatric Association in California, superseded the older Northern California Society for Neurology and Psychiatry, and enjoys a membership from all of the coastal counties in the northern half of the State. Another very active group of psychiatrists was organized five years ago; the East Bay Psychiatric Association with over 75 members is an affiliate of The American Psychiatric Association.

TRAINING AND RESEARCH

San Francisco has been fortunate in being the locale of the great medical schools belonging to Stanford University and the University of California. During the past two decades, their psychiatric departments have increasingly provided training facilities for medical students, psychiatric residents, psychiatric social workers, and clinical psychologists. Collaborative arrangements with

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schools of nursing and colleges offering curricula in occupational and recreational therapy have enabled the two medical centers to offer specialized training to the ancillary professions as well.

On April 5, 1941, the cornerstone of the future Langley Porter Clinic was laid by the Governor on land made available by the University of California at its Medical Center in San Francisco. It was the California Legislature's intention "to provide opportunity for the State and the University to cooperate in prevention, diagnosis, treatment, and promotion of research in the field of mental disorder and advancement of the learning and knowledge of the students of the University. . . ." The Director of the Department of Institutions at that time was Dr. Aaron J. Rosanoff, who was the first psychiatrist to head California's mental hospital system, and who worked tirelessly for several years to persuade the Governor and the Legislature to approve the project. Dr. Rosanoff was characterized as "a social minded, scientifically trained physician, . . . whose contributions to psychiatric literature and whose teaching in psychiatry" placed him foremost in the opinion of the Dean of the Medical School, Dr. Langley Porter, who had aided and abetted the entire plan from the start, and who had obtained from Surgeon General Parran the assignment of Dr. Walter Treadway to the University. Dr. Treadway's experience in building and organizing psychiatric hospitals for the United States Public Health Service made his help invaluable during the planning stages, 1940-41. Before the actual opening in 1943 of the 100-bed hospital, now officially known as the Langley Porter Neuropsychiatric Institute, Dr. Karl M. Bowman was engaged to become its medical director and to accept the appointment of Professor of Psychiatry at the University of California Medical School. Dr. Bowman had 18 months in which to recruit his staff and to initiate the training and research programs under exceedingly difficult, war-time conditions before the actual opening. Dr. Rosanoff was prevented by a fatal illness, from which he died a few weeks later, from attending the opening ceremonies in April, 1943. The large outpatient department,

which developed a case-load of 750 patients during its first year, was promptly named for him. Dr. Porter, now retired, has remained actively interested in the facility which bears his name and, not long ago, addressed the staff at one of its regular weekly conferences. Dr. Treadway, also retired and living in Santa Barbara, has been an active member of the California Advisory Committee on Mental Health ever since it was first created by Governor Earl Warren in 1951.

The opening of the Langley Porter Neuropsychiatric Institute signaled a unique working arrangement between the State Department of Institutions (since 1945, the State Department of Mental Hygiene) and the University of California. It resulted in the launching of state-supported, full-scale programs of research, training, and outpatient services in the field of psychiatry, which eventually extended beyond the confines of the Langley Porter "clinic" and reached into the state hospitals. Research projects were undertaken by the hospitals, first in collaboration with the Langley Porter Neuropsychiatric Institute, and eventually on their own initiative. By 1956, these projects had become sufficiently numerous and important to warrant the creation of the position for a chief of research to organize and expand the research program within the Department of Mental Hygiene. The Legislature is now considering a similar development in the area of training. The state hospitals and clinics within striking distance of San Francisco have thus been drawn into the orbit of training and research centering in the San Francisco Bay Area.

The San Francisco County Hospital, long used as a training facility for junior students from both medical schools, opened a psychiatric wing in 1938 to replace its crowded detention wards and to implement a training program for psychiatric residents from both universities. Shortly thereafter, under the direction of Dr. Jacob Kasanin, the Mt. Zion Hospital initiated a psychiatric program for residents, and established an outpatient clinic which is now directed by Dr. Norman Reider. Training at the clinic in both adult and child psychiatry is provided, not only for psychiatric residents, but

also for psychiatric social workers in affiliation with the School of Social Work at the University of California in Berkeley. Mt. Zion's psychiatric residents may spend a year on the San Francisco County Hospital's psychiatric service.

The events in Europe which led up to World War II resulted in the emigration to California of a small number of distinguished psychoanalysts, who formed the nucleus of a training center for psychoanalysis in San Francisco. At first, this center operated as a branch of the Topeka Psychoanalytic Institute, and it was officially recognized by the American Psychoanalytic Association in 1948 as the San Francisco Psychoanalytic Institute. Its branches in Los Angeles and Seattle have subsequently been given the status of independent institutes.

During the 'forties, several Bay Area hospitals and clinics either expanded or established training programs for psychiatric residents, psychiatric social work students, and clinical psychology trainees. The V.A. hospitals at Palo Alto and at Fort Miley, along with the mental hygiene clinics for veterans in Oakland and San Francisco, strengthened their teaching staffs. The Children's Hospital in San Francisco established a full-fledged child guidance clinic, which developed into a training facility for child psychiatry.

In the East Bay, Herrick Memorial Hospital in Berkeley opened a psychiatric ward less than ten years ago. This inpatient and outpatient service in a private, general hospital has been recently expanded and now occupies a newly built wing. The psychiatric residents are trained there by staff-members, some of whom are also on the teaching staffs of Mt. Zion Hospital and the Langley Porter Neuropsychiatric Institute.

At the present writing, plans are being implemented for the moving of the Stanford Medical School from San Francisco to the University's campus in Palo Alto. At this new medical center, facilities for a greatly expanded training program will include a thousand-bed general hospital under the Veterans Administration that will provide over 600 psychiatric beds for teaching purposes. Stanford's center for advanced studies in the field of the social sciences has recently been

established at Palo Alto, and research that often touches upon psychiatry is already under way there.

STATE PROGRAMS

State-wide services currently operated by the State Department of Mental Hygiene represent a spectacular transition during the past twenty years from an institutional type of custodial care for the mentally ill to the use of many different kinds of treatment within the hospitals, along with rehabilitation services to patients on convalescent leave from the state hospitals, pre-admission and follow-up clinics at the hospitals, all-purpose mental hygiene clinics, mental health educational and informational services, two neuropsychiatric institutes located at the University of California in San Francisco and Los Angeles, and organized research and training programs within the state hospitals and clinics. The Department now has over 15,000 employees and an annual budget of about 100 million dollars. Several events marked the period of transition and brought about certain psychiatric developments in the area of San Francisco, as well as elsewhere throughout the State.

In 1938, the Legislature authorized a program to help patients in the state hospitals to return to community life, through follow-up medical review of patients on trial-leave, and through the establishment of bureaus of social work (now numbering 18) in the patients' home communities. At large regional offices in San Francisco and Oakland, trained psychiatric social workers are thus available, for purposes of social rehabilitation, to patients who have been previously hospitalized at Agnew, Napa, Sonoma, Mendocino, and Stockton State Hospitals. In collaboration with the state hospitals and clinics, with the State Bureau of Vocational Rehabilitation, with local health and welfare agencies, and with volunteer organizations, the bureaus of social work are able to offer a variety of psychiatric rehabilitation services, including the provision of foster homes. There are currently over 9,000 patients on convalescent leave who receive these services in all of California's 58 counties.

The period of most rapid progress in the development of state hospital services began after World War II. Until then, the wartime shortages of both personnel and building materials precluded any substantial advances in this program, particularly in the face of the unforeseen, continuing, and staggering growth of the general population in this State. The admission rate has remained steady since 1950 but, though the general population goes on increasing at the rate of 1,000 persons a day, an increasingly high rate of discharge resulted in fewer hospitalized patients on June 30, 1957 than there were on July 1, 1956. Many factors are undoubtedly responsible for this state of affairs, but more and better techniques of treatment and rehabilitation within the state hospitals played the most important part.

The establishment of the first and still the largest, state-supported outpatient clinic at the Langley Porter Neuropsychiatric Institute was followed, between 1946 and 1950, by Legislative authorization for 7 state mental hygiene clinics in Los Angeles, San Diego, Fresno, Sacramento, Berkeley, Riverside, and Chico. The Bekeley clinic, across the Bay from San Francisco and financed entirely by federal grant-in-aid funds through the National Mental Health Act, opened in 1948 as a branch of the Langley Porter Clinic for training purposes. Located on the campus of the University of California at Berkeley, this clinic has been affiliated as a field training center with three departments of the University: psychiatry, psychology, and the School of Social Welfare. The Berkeley Clinic has also provided training in outpatient psychiatry to residents from the V.A. training hospital in Palo Alto and, for a time, from the U. S. Army's Letterman General Hospital in San Francisco. It is noteworthy that, among its graduates, this clinic counts the superintendent and medical director of a state hospital for the mentally retarded, the director of the largest outpatient psychiatric clinic in the State, and the psychiatrist who heads the mental health program in the State Department of Public Health. Since 1956, two United States Public Health Service fellows in community psychiatry have been trained each year at the

Berkeley clinic, thus initiating a new and on-going program that is rare in California and elsewhere; residency training programs have generally concentrated on clinical psychiatry, and a curriculum in community psychiatry accompanied by supervised field experience in community mental health services of a non-clinical nature is practically unknown. This pilot training program at Berkeley, therefore, represents the latest organized attempt to teach in California the special skills required of psychiatrists as mental health educators or consultants in community programs promoting mental health.

All of the state mental hygiene clinics, in addition to providing direct services to patients, also offer services to their communities of an informational, educational, and consultative nature. Out of its central office in Sacramento, the Department of Mental Hygiene initiated in 1950 a public information and education program, employing the usual mass media of communication, maintaining libraries of pamphlets and films on mental health, and publishing special brochures as well as monthly news bulletins. In 1952, there were established in both San Francisco and Los Angeles information centers whose purpose is to promote the effective use of both state and local resources for the mentally retarded.

LOCAL MENTAL HEALTH SERVICES

During the eleven years following the passage of the National Mental Health Act in 1946, the federal grant-in-aid program was administered for the first five years by the State Department of Public Health and, since 1951, by the State Department of Mental Hygiene. Between 1947 and 1957, national mental health funds were allocated to local agencies in 25 of California's most populated counties, thus extending community mental health services to 90 percent of the state population. California now has a total of 65 non-profit, psychiatric outpatient clinics. Twenty-seven (42%) of them were started with the aid of federal funds, and 9 of them are in the San Francisco Bay Area alone. The Children's Hospital child guidance clinic in San Francisco and the

child guidance services in the Children's Hospital of the East Bay in Oakland are used for training in child psychiatry and pediatrics, respectively.

In Oakland, these funds have contributed to the support of the East Bay Activity Center, where rehabilitation services of a psychiatric and educational nature for mentally ill children have already returned to the public schools 12 out of the first 30 children treated there. Health Departments, schools, and welfare agencies in the Bay counties of Contra Costa, Alameda, and San Francisco have all received through federal funds the benefits of mental health services of an educational or consultative nature(4).

The federal grant-in-aid for hospital construction under the Hill-Burton Act has given impetus to the building of facilities for psychiatric patients in a number of general hospitals, both public and private, throughout California. In the Bay Area there are now 7 general hospitals with psychiatric treatment programs for inpatients, viz. San Francisco, San Mateo, and Contra Costa County Hospitals; Herrick Hospital in Berkeley; Stanford University Hospital, Fort Miley V.A. Hospital, and the St. Francis Hospital, all in San Francisco.

At the 1957 session of the State Legislature, the Short-Doyle Act for Community Mental Health Services was passed almost unanimously. This measure was drafted and actively supported by the three district branches of The American Psychiatric Association in California, in close cooperation with the California Medical Association. The Act became law on September 11, 1957.

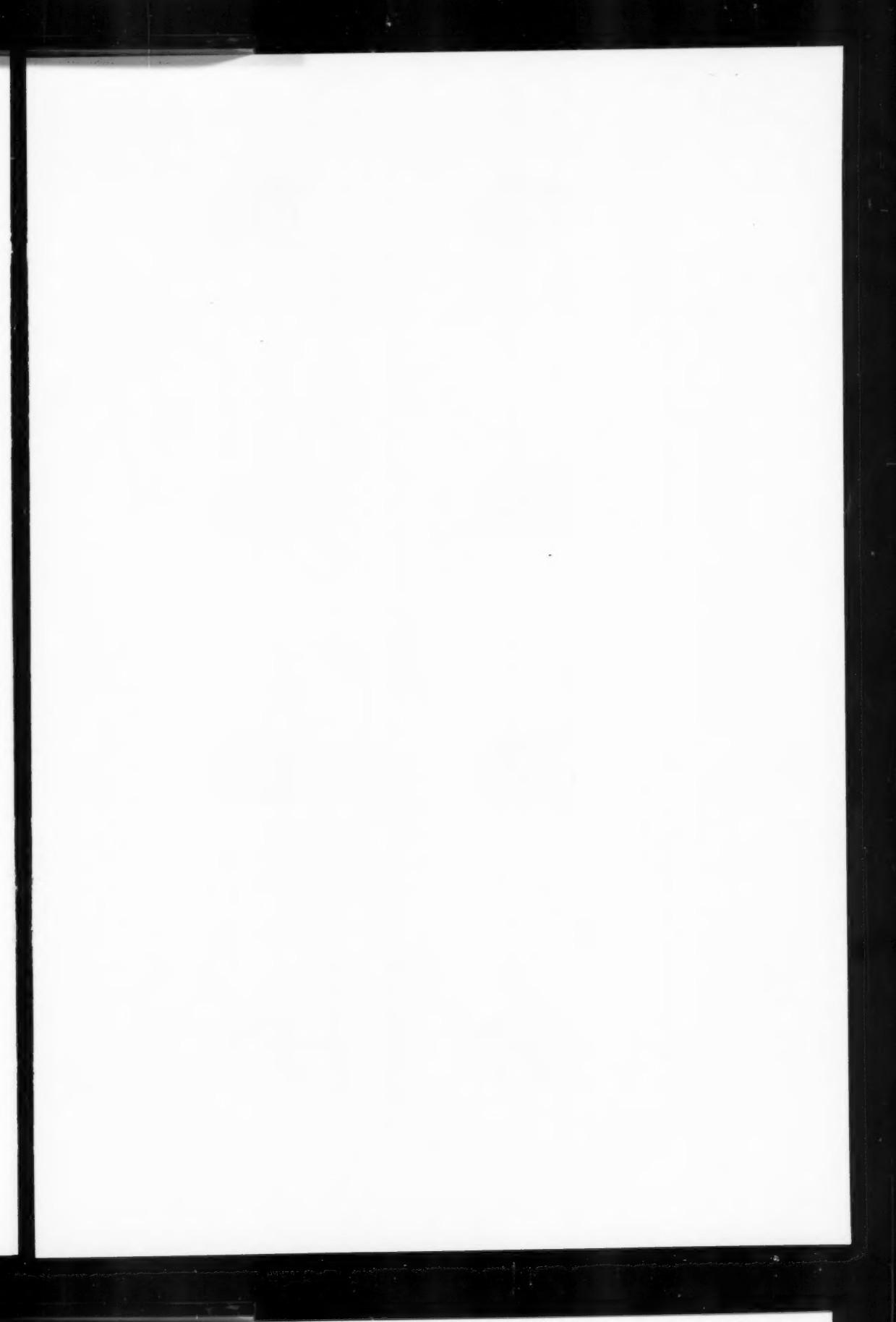
The Community Mental Health Services Act authorizes cities and counties to establish, at their option, two or more of five kinds of mental health services: inpatient, outpatient, and rehabilitative services to individual patients; educational and consultative services to health, educational, and welfare agencies. The Act also carries a financial reimbursement from the State to the extent of 50% of the budgets for the locally operated programs(5). In its general provisions the California Act is thus very similar to New York's Community Mental Health Services Act.

Both the need and the readiness of the local governing bodies to use the Act were immediately apparent when 12 cities and counties, representing 62% of the population of the entire state, took official steps within the first month (December, 1957) to establish local mental health services in accordance with the new law. The four Bay Area counties of San Francisco, San Mateo, Contra Costa, and Santa Clara, as well as the city of San Jose have all appointed their local mental health directors. In San Mateo County, for example, under the administration of the health officer who is also the medical administrator of the county hospital, all five mental health services for which the Act provides are receiving financial aid from the State, beginning on January 1, 1958.

It is of considerable interest that, in all of the first 12 cities and counties to come into this new program, the value of local mental health services was demonstrated by their originally being established with federal grant-in-aid funds. The chief purpose of the Short-Doyle Act is to encourage the treatment of the patient in his home community in close proximity to the family physician, the local general hospital and the other agencies in the community that play a part in the prevention or alleviation of psychiatric disorders, including mental retardation. One corollary of such a purpose is the closer collaboration of the psychiatric specialist with the rest of the medical profession.

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COLOR CHART FOR RAPID URINARY TEST

CHLORPROMAZINE (THORAZINE):



PROMAZINE (SPARINE) AND MEPAZINE (PACATAL):



CLINICAL NOTES

A RAPID URINARY TEST FOR CHLORPROMAZINE, PROMAZINE AND PACATAL: A SUPPLEMENTARY REPORT

FRED M. FORREST, M.D., IRENE S. FORREST, PH.D., AND AARON S. MASON, M.D.¹

In a previous communication² a rapid test for the detection of phenothiazine derived drugs was described. On the basis of more than 1,000 urines tested, some practical conclusions can be reported at this time. It was found that approximately 5% of all mental patients on oral drug therapy, both from open and closed wards, were able to deceive the nursing personnel by failing to swallow part or all of the prescribed tranquilizing drugs. Therefore, the test served the triple purpose of objectively evaluating the actual drug intake, to track down and correct the number of apparent "drug refractory" cases, and detect and eliminate waste in the drug budget entailing considerable economic losses.³

To facilitate interpretation and standardization of the test, a color chart was prepared. In assembling the statistical data, the specific weight of the urines, their pH, the patient's body weight, and time of collection of specimens in relation to drug intake were considered. To define the 4 levels of color intensity as represented in the chart, the "average reaction" for each level of the color chart was established on the basis of the urinary reactions of 50 patients per drug and dosage. Each "+" in the color chart thus corresponds to an increase of 300 mg of drug. The chart was devised to be

used in conjunction with the following test solution: 4 parts of 10% sulfuric acid with 1 part of 5% ferric chloride solution.⁴

Equal volumes of urine and test solution (e.g., 1 ml each) are mixed in a test tube. The resulting color is read at once against the chart, since oido-reduction processes⁵ will modify the color on standing.

Individual Excretion Factor: 98% of the tests performed yielded congruent results within the range determined as "average" for the respective dosage level. Only 2% of the specimens tested deviated from the average reactions by showing color reactions either too pale or too intensive in relation to drug intake. In most of these deviant reactions the findings were consistent and reproducible, leaving the question of "individual excretion factor" open to further investigation. In our hospital, a patient's individual excretion factor (XF) is made a part of his medical record. Thus, a patient on a daily maintenance dose of 400 mg of drug, showing a urinary color intensity of "++" during his hospitalization, is expected to show the same excretion factor (XF++) on periodic return visits.

In no case was the color test negative, after an amount of 50 mg of drug or more had been ingested. We have not seen any false positive or negative test results.

Possible Factors of Interference: In more than 1,000 specimens tested, we have not encountered any interference with the uri-

¹ Respectively Staff Psychiatrist, Research Bio-chemist, and Director, Professional Services, VA Hosp., Brockton, Mass.

² Forrest, F. M., and Forrest, I. S. Am. J. Psychiat. 113: 931-932 (1957).

³ This 5% rate of waste, confirmed by spot tests in other hospitals, represents an annual 5 to 6 figure amount for each of the major hospital organizations, such as the VA or N. Y. State Hospitals, spending millions of dollars per year on chlorpromazine and other phenothiazine derived drugs.

⁴ In our original publication² a test solution consisting of equal volumes of sulfuric acid and ferric chloride had been specified. It was subsequently found that the 4:1 mixture establishes a pH of 1 or less, i.e. an acidity at which no interference by aspirin containing drugs is possible, and is therefore preferable.

⁵ Some aspects regarding the chemical basis of the test were previously reported.²

nary color test by non-phenothiazine derived drugs. Thus, neither reserpine, nor meprobamate, barbiturates, other sedatives, niacin etc. affected the color tests. Mixtures of phenothiazine drugs, however, can not be properly interpreted since the individual drugs produce various shades of color, from orange to purple.

Substantial amounts of ascorbic acid or other reducing agents may modify the test colors towards greenish shades. In these rare cases, observed after high therapeutic dosages of multivitamins, a small additional volume of test solution will restore the usual test colors as represented in the chart.

Specific weight of urines: Variations in urinary density within wide limits do not affect the test results appreciably, except

when fluid intake was excessive (3 quarts or more per day).

Effects of pH and body weight: Neither the urinary pH, nor the ratio of drug dosage per body weight seemed to affect the test results within the limits of accuracy obtainable by this method.

The route of administration, oral or parenteral, did not affect the test results. Even a single dose of a phenothiazine drug is eliminated over a period of several days—a high dose, for instance, being frequently demonstrable by this method for more than 8 days—and it is impossible to decide, whether a “++” reaction is due to a recently ingested dose of 300 to 600 mg of drug, or a dose exceeding 800 mg several days before.

AN ACCEPTABLE NONBARBITURATE SEDATIVE AND HYPNOTIC FOR MENTAL PATIENTS IN A STATE INSTITUTION

MARIANNE W. CHERMAK, M.D.¹

In looking for a sedative and hypnotic drug which does not involve easy respiratory depression, habituation or toxicity, we found that Doriden² has a great margin of safety in mentally disturbed patients.

Doriden is an alpha-ethyl-alpha-phenyl-glu-tethimide, which is used as a sedative in smaller doses (0.25 gr.) and as a hypnotic in larger (0.5 gr.) doses.

Eighty-five female patients were selected who presented difficult behavior problems and chronically disturbed combative or noisy and restless manifestations. Their ages varied from 33 to 77 years, the majority being between 40 and 65 years of age. All had been in the institution for a number of years. There were 3 groups: 61 patients with schizophrenic reaction; 10 patients were mental defectives with psychotic or behavioral reactions; 15 patients had epileptiform seizures, due to idiopathic epilepsy or

due to organic brain disease of various etiology.

Doriden was used in relatively small doses in the majority of cases: 250 mg. t.i.d. was sufficient for most patients to improve the behavior pattern. The epileptic group received 250 mg. once or twice daily in addition to the former medication mentioned previously.

In a few cases belonging to the schizophrenic group, the dosage of Doriden was increased while in others it had to be decreased by one dosage because of some drowsiness.

A bi-weekly check was made on the ward, with the ward physician and personnel keeping close watch. The drug was given daily for a period of 6 weeks.

Before the study had progressed very long, Doriden had to be discontinued in 28 patients because of their refusal to take the medication; the drug was discontinued with 11 patients who complained of dizziness and headache, while in 9 patients Doriden was discontinued because they developed a skin rash. It is interesting to note that some of these patients also had allergic reactions

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² The Doriden in this study was supplied through the courtesy of Dr. F. J. Vinci, Ciba Pharmaceutical Products, Inc.

after the intake of other drugs. (No follow-up studies were done to see if with the reinstitution of Doriden the same patients developed a rash.) In view of this we were unable to ascertain that all the rashes were directly attributable to Doriden. Out of the 57 remaining patients, 37 (65%) showed very definite improvement and two more impressively improved. Eighteen showed no appreciable change and one (an epileptic) was a little worse from the behavioral standpoint. As a result of the administration of Doriden, we noticed that the enthusiasm on the part of the nursing personnel had been

favorably affected. Several attendants asked us to put more cases on the drug, furnished more names, and felt that the caretaking of the wards had become much easier, indicating that the drug had a general over-all beneficial effect on the patients under their nursing care.

Considering that almost 65% of the patients receiving small doses of Doriden showed improvement (they were more alert, less destructive or combative, and hallucinated less), it should encourage others to try this drug on a larger scale in mental institutions.

A CLINICAL TRIAL OF MARSILID IN PSYCHOTIC DEPRESSED PATIENTS

ANTONIO J. DELIZ FERREIRA, M.D., AND HARRY FREEMAN, M.D.¹

The present note deals with results obtained in a clinical study on 11 female psychotic patients with evidences of severe depression, treated with iproniazid (Marsilid). In previous papers, Loomer, Saunders and Kline(1) administered the drug to 17 chronic, female institutionalized patients over a period of 5 months with "appreciable" effects in 4 and "some response" in 7. Ayd(2) treated 50 depressed patients with Marsilid over a period of 3 months and found marked improvement in 5 and partial improvement in 19.

The patients in this study had an average age of 36.6 years (range, 29-60 years), and an average period of hospitalization of 1.3 years (range, 8 months-7 years). Seven of the patients were schizophrenic and the other 4 were "pure" depressions. All patients had been on closed wards and had had ECT treatment previously with no effect.

The dose varied from 100-200 mg. daily, the average being 150 mg. Nine patients took the drug for three months and two for two months. In one patient the dose had

to be reduced to 50 mg. daily because of the appearance of an ataxic gait.

The patients were interviewed at bi-weekly intervals and rated by means of a modified form of the Malamud Sands rating scale(3) to determine quantitatively the items of behavior which might be affected.

Following the administration of the drug, one patient went home on visit and 3 improved enough to be transferred to open wards. Five others showed some lessening of the depressive features but not enough to alter their ward status. Two showed no change.

On the basis of the scores, the greater part of the improvement was shown within the first month. The scores also decreased in the direction of improvement by one-third. Analysis of the changes in individual items of behavior showed an improvement in motor activity, mimetic expression, responsiveness, socialization, attention, speech, mood, feeling and perception. Hostility, on the other hand, was slightly increased. In the items of thought processes, the trend showed a shift from obsessive ideas, somatic delusions and despairing self-blame to illogical thinking, ideas of inference and shifting of blame. From this point of view, the drug altered the type of thinking, but not necessarily in a beneficial manner, toward a

¹ From the Dementia Praecox Research Project, Worcester State Hospital, Worcester, Mass., aided by a Ford Foundation Grant to the Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

"schizoid" type of ideational content. Whether this was due to the fact that the majority of the patients were schizophrenic can be determined only by using the drug in a sufficiently large number of non-schizophrenic depressions.

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SEIZURES DURING THERAPY WITH PHENOTHIAZINE DERIVATIVES

DOUGALD D. MCLEAN, M.D.¹; HAROLD R. MARTIN, M.D.²; ROBERT J. ELLINGSON, PH.D.³; AND JACKSON A. SMITH, M.D.⁴

This report⁶ describes three approaches in the evaluation of seizures occurring during the administration of promazine, which include: a detailed electroencephalographic study of one patient, an appraisal of 10 others who had seizures while receiving the drug, and a control and treatment study of the electroencephalograms of 24 patients receiving promazine who did not show seizures.

The detailed study was of an 18-year-old male schizophrenic whose past history included no serious physical illness, head injuries or neurological disorder. A complete work-up revealed no abnormalities.

The patient was started on promazine in doses of 300 mgm. daily, which was increased to a 1200 mgm. daily dose in a 10-day period, resulting in a typical grand mal seizure. Promazine was discontinued and an EEG was taken within 24 hours after the seizure, which was reported as normal.

Three days after the first seizure, promazine therapy was restarted at a dosage of 600 mgm. daily and increased to a maximum dose of 1600 mgm. per day during a 3-week interval. A second EEG taken during this period showed no abnormalities. On the 25th day of the second course of promazine, the

patient had a second grand mal seizure and a third EEG taken within 24 hours after the second seizure again showed no abnormalities.

After the second seizure, the promazine was discontinued and the patient showed a recurrence of restlessness and anxiety, and was given 13 electroshock treatments in a 6-week period, resulting in a temporary remission of symptoms.

One month after the last EST treatment, the patient was taken to the EEG laboratory and intravenous promazine was administered while continuously recording the EEG. Three hundred mgm. of promazine was given in an 8-minute period and after a 15-minute interval an additional 150 mgm. of promazine was given; the tracing was continued 25 minutes after the termination of the injection. There was a generalized slowing of the EEG during the injection which was associated with the quieting of the patient's restless behavior. These slow waves were identified as "drowsy phenomena." The impression was that this was a "normal tracing with no evidence of paroxysmal features" either during or after the intravenous administration of a large dose of promazine.

During a double-blind evaluation of 75 patients in a comparison of promazine and chlorpromazine, 10 were observed to have seizures.

At the end of the study when the data was examined, it was found that of the 10 patients who had seizures, one patient had a prior history of seizures. This patient had repeated seizures on promazine, chlorpro-

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⁵ This study was supported by the Nebraska Board of Control Fund for Psychiatric Research.

mazine, and the placebo, but did not have seizures on metaphenylbarbituric acid. Another patient had seizures while on promazine and chlorpromazine, and the remaining 8 patients had seizures only while on promazine in a dosage of 800 mgm. daily.

At a second state hospital, a group of 24 chronically ill male mental patients, varying in age from 27 to 71 and having no prior history of epilepsy or organic disorders, was selected. Control EEGs were recorded before medication and following one month's promazine treatment. The dosage was started at 150 mgm. daily and gradually increased to a maximum dose of 900 mgm. daily which was continued for the last two weeks of the period. EEGs were taken following this one-month period of promazine medication and compared with those taken prior to the institution of drug therapy.

Six subjects of the 23 who completed the one-month period of drug administration showed higher voltage rhythmic activity in one of the records than the other, the promazine records showed the highest voltage in

5, the non-promazine in one. No spike activity or activity suggestive of seizure phenomena was seen in any of the tracings, and all changes could be explained on the basis of diurnal variations.

The conclusions drawn from the above data suggest that some of the phenothiazine derivatives produce *grand mal* seizures when given in high dosages to certain patients. Although promazine would appear to be one of the most frequent offenders, it was not found to produce seizure discharges or other changes in the EEG in intervals between seizures in this study. The patient known to respond to promazine with seizures was given 450 mgm. of promazine intravenously during the recording of an EEG without producing seizure discharges. Although promazine, and to some degree other phenothiazine derivatives, apparently either lower the seizure threshold or produce foci of hyperirritability, there is no evidence, clinically or from the EEG, that this effect persists beyond the period of drug administration.

THE EFFECT OF CETADIOL ON DELIRIUM TREMENS, ALCOHOLIC HALLUCINOSIS, AND ALCOHOL WITHDRAWAL¹

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P. KUBZANSKY, PH.D., AND P. SOLOMON, M.D.²

INTRODUCTION

Steroids, particularly adrenal cortical extracts, have been used in the treatment of alcoholism since 1949(1). Reports by Campbell and Sleeper(2) and Lemere(3) have indicated that Cetadiol (5-androsterone-3, 16-diol) is of value in relieving the symptoms of alcohol withdrawal. Unfortunately, these reports offered no data that could be evaluated from the point of view of the

severity or nature of the alcoholic withdrawal states and no control studies were made. Victor and Adams(4) have stressed the difficulty of assessing the effect of a medication on the course of alcohol withdrawal because spontaneous remission is so frequent.

METHOD

Cetadiol and placebo were given to 82 patients suffering from various degrees of alcohol withdrawal. The following criteria were used to categorize the patients:

1. Alcoholic withdrawal—tremulousness, perspiration, with or without confusion.
2. Alcoholic hallucinosis—tremulousness, perspiration, confusion, visual or auditory hallucinations, but normal orientation for time, place, and person.

¹ From the Psychiatry Service, Boston City Hosp., and the Department of Psychiatry, Harvard Med. School. This study was aided in part by a grant from the Nepera Chemical Co., to whom we are also indebted for the supply of Cetadiol used.

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3. Delirium tremens—tremulousness, perspiration, confusion, visual or auditory hallucinations, disorientation for time and place.

THERAPEUTIC REGIME

Cetadiol in a concentration of 5 mg. per cc of propylene glycol was given orally as follows: 80 mg. on admission or at the onset of symptoms, 40 mg. in 8 hours, and then 20 mg. every 4 hours. The patient received 200 mg. in the first 28 hours and 120 mg. on each succeeding day until he was asymptomatic or until the treatment was abandoned because symptoms of alcohol withdrawal persisted or increased to such an extent that the patient's welfare appeared to be in jeopardy. The patient also received vitamins, house diet as tolerated, intravenous fluids as needed, and any other treatment necessitated by his medical condition.

The average length of time Cetadiol was given in each diagnostic category was as follows: delirium tremens—40 hrs., alcoholic hallucinosis—42 hrs., alcoholic withdrawal—60 hrs. In patients with alcoholic hallucinosis and delirium tremens it was often necessary to discontinue Cetadiol because the patients became increasingly violent or had no symptomatic improvement.

RESULTS

Five patients were eliminated from consideration because of their inability to retain Cetadiol and 4 because of the diagnosis of Korsakoff's psychosis. Thus 73 remained. Cetadiol was given to 56, 11 of whom received the drug in a double blind study. Placebo consisting of a mixture of cholesterol and propylene glycol was given to 17, 10 of whom received it in the double blind study. The results may be seen in the accompanying table.

There appears to be no significant difference between the effect of Cetadiol and the placebo. Since these medications were studied only with respect to their immediate effect on the conditions involved, the subsequent course and final outcome in these cases is not included here.

CONCLUSIONS

Cetadiol does not have a tranquilizing or sedating effect on patients suffering from delirium tremens or alcoholic hallucinosis. It does not shorten the course of delirium tremens. The placebo used in this study is as effective as Cetadiol in relieving symptoms of alcohol withdrawal.

TABLE 1

THE RESULTS OF ADMINISTERING CETADIOL AND PLACEBO TO PATIENTS IN VARIOUS FORMS OF ALCOHOLIC WITHDRAWAL STATES

	No. of patients	Cetadiol administration		Placebo administration		
		Complete remission	% remission	Complete remission	% remission	
Alcoholic withdrawal	21	17	81	4	3	75
Alcoholic hallucinosis	19	9	47	5	2	40
Delirium tremens	16	4	25	8	2	25
Total	56	30	54	17	7	41

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MARSILID IN DEPRESSION

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It appears that the best news for psychiatry in 1957 was the discovery that Iproniazid (Marsilid-Roche) protects serotonin

from monoamine oxidase. Serotonin, allowed free activity in the brain, is perhaps the most energetic releaser of reserve power in the human machine, and this effect will

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overcome melancholia in a majority of cases within 2 to 4 weeks.

Over a period of 8 months, 65 patients started on Marsilid showed 46 good results, and these data could have been even better if the 10 patients who discontinued the first week, had continued 4 weeks, the period necessary for a fair appraisal of the chemical's effectiveness. Some of the 46 "improved" cases showed remarkable metamorphoses. It was not unusual for some to declare "I feel better now than I ever felt before in my life." The psychiatrist derives much satisfaction in observing the return of optimism, gay manner, joviality, and normally spontaneous speech, in a recently retarded, hopelessly disconsolate person who might have resorted to self destruction,—knowing this was accomplished by a pill.

This chemotherapeutic method possesses major advantage for the person who must remain on the job, who dares not take a leave of absence for 6 weeks to undergo electrocoma therapy. The psychiatrist must not forget however that the return of optimism occurs sooner when electrotherapy is administered.

Certain side effects sometimes occur when Marsilid is taken in full dosage. Too rapid weight gain can be interrupted by reducing dosage. Jaundice, reported in rare instances, has not occurred in any of these cases. Perhaps conservative dosage prevented this. Edema of ankles or eyelids sometimes with allergic generalized body rash has occurred in 3% or 4%. This can be obviated by stopping the drug and administering Diuril (Merck) with resumption of Marsilid in lower dosage when edema is gone. Reduction of libido or impotence occurs rarely—usually obviated by reducing Marsilid dosage and

administering androgens or panthenol, or both. (Increase in libido also occurs in rare instances.) *Overdosage* may produce the major complication of a manic type psychosis.

These side effects must be weighed against the occasional fracture complications when ECT is administered to melancholy patients without the protection of a muscle relaxing drug (fractures are avoided today by those who use anectine routinely). Certainly to the aggressively suicidal patient, electrocoma therapy with succinyl to prevent fractures, must be given immediately as a life saving emergency measure, because the 3 to 4 week latency period before Marsilid induces remission involves a too serious calculated risk. Once the extreme melancholia is obviated, many patients can convalesce on Marsilid, thus reducing the electric treatments and prophylactically preventing future recurrences.

Clinical evidence suggests that Iproniazid may induce a pyridoxine deficiency in some persons, but laboratory confirmation is not yet available. Therefore this B complex factor should be administered routinely with Marsilid. A tablet combining the two is now available for investigational purposes. As greater proficiency is acquired in the use of this new psychic energizer, complications may be reduced.

The individual case histories (impossible to describe in a short clinical note) make encouraging reading to psychiatrists who are constantly confronted with suicidal risks in their practice.

ADDENDA: Case histories and other details will be found in the 1957 Transactions of the Association for Research in Nervous and Mental Disease and in a forthcoming issue of the *Journal of Experimental and Clinical Psychopathology*.

THE EFFECT OF CHLORPROMAZINE ON THE BEHAVIOR OF DISTURBED CHILDREN¹

GORHAM G. LANE,² WILLIAM G. HUBER,³ AND F. LOREN SMITH²

Although chlorpromazine (10-(3-diethylaminopropyl)-2-chlorophenothiazine) is often

used as a therapeutic adjunct in treating mental illness, its effects on behavior have not been clearly identified. Flaherty and Gatski (1), and Freed and Peifer (2) noted that it had a calming effect on the behavior of disturbed children. Gibbs *et al.* (3) found no

¹ This study was made possible through the co-operation of the clinical staff, Governor Bacon Health Center, Delaware City, Del.

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evidence of its therapeutic effectiveness. One difficulty in evaluating its effectiveness is that of specifying precisely the forms of behavior affected. The present study attempted to overcome this difficulty.

In a preliminary investigation behavioral responses of disturbed, institutionalized children were recorded over a three day period in a classroom situation. Responses were defined in terms of actual behavior, such as: "poking," "slapping," or "hitting." The items were subsumed under 7 categories such as: "physical violence," "nervousness," "swearing," "irrelevant noises." During this stage of the investigation, two experimenters observed 6 children over a period of 5 days and, using time sampling procedures, recorded the number of responses shown by each child in each of the 7 categories. Two categories were chosen as showing sufficient inter-rater agreement so that they might serve in the subsequent experiment. These were "physical violence" and "nervousness," with coefficients of correlation between raters of .83 and .74, respectively. For "physical violence" 9 separate behavior items were observed. For "nervousness," 8 items were observed.

Subjects in the subsequent experiment were 8 maladjusted, institutionalized males ranging in age from 10 through 12 years. Four were drawn from one classroom and 4 from another. Subjects were arranged into two groups by matching a child from each classroom with one from the other, on the basis of psychiatric diagnosis and age. Placebo or chlorpromazine (25 mg.) was administered 3 times daily by house parents in an order counterbalanced over groups. Neither house parents nor experimenter knew who was receiving the placebo or the drug. Behavior ratings were made twice daily while the children were attending regular classes.

Treatment of results used a derived score, $f - f_e/f_e$, with f the number of responses for

each day, and f_e the average daily responses during an initial control week.

Analysis of variance showed no significant differences either for order or conditions; for physical violence $F = .68$, for nervousness $F = .84$. No cumulative effect of chlorpromazine was noted.

The data showed considerable variability both for a given subject from day to day and also from subject to subject. For example, the physical violence responses of one subject during one week under chlorpromazine ranged from .82 through -1.00, and under placebo from 1.40 through -.80. Other subjects' responses showed as much or more variation. The drug had a greater effect in suppressing physical violence than nervousness: 6 subjects showed a lesser number of physical violence responses for the drug period, while only two showed an increase. Four subjects showed an increase in the number of nervousness responses under the drug, and 4 showed a diminution. It is possible that the drug may be found to be most effective in suppressing gross responses such as those measured in the area of physical violence.

Failure of these data to show statistically significant effects is in contradiction to many studies, and may derive from the use here of objective response observation. The possibility that biochemical differences among children interact with the drug to produce intra- and inter-individual variability of behavioral effects should be further investigated.

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ADMINISTRATIVE NOTE

A METHOD FOR ACCELERATING DISCHARGE FROM STATE HOSPITALS

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Despite the current emphasis on rehabilitation, there are many remitted psychotic patients who remain in the hospital for social as opposed to psychiatric reasons. 'Social supports' in the shape of spouses, interested relatives, friends, or employers are often lost, particularly when mental illness is lengthy or repeated. This renders the task of returning such patients to the community much harder. They may be compelled to live isolated lives in furnished rooms, without monetary reserves, or friends to turn to until they find their place in society again. They may very well feel anxious and insecure, receive little encouragement, and find the change from the shelter of the hospital to the stress of normal life too abrupt. Social isolation helps to contribute towards early relapse.

Since August 1957, we have been encouraging selected female patients from Manhattan State Hospital to work in the city while continuing to reside in the hospital. These patients have included schizophrenics, psychopaths and alcoholics, where social factors such as marital separation, rejection by their families, or breakup of the home would ordinarily have delayed or prevented their discharge. The patients have been selected because of ability and motivation to work, based on previous work record, nurses' reports, and psychiatric assessments. Unreliability, impaired superego control, inability to form a reasonable relationship with the psychiatrist, habit deterioration, and easily triggered aggressive or depressive reactions formed the main contraindications.

At the time of writing, of 10 patients, 3 have left the hospital and are still at work. Two patients have individual rooms in the research division and go daily to work. Two

patients lost their jobs, one through dishonesty, and one probably through poor initiative and performance. Two patients relapsed (return of auditory hallucinations; recommenced drinking), and one patient is still seeking work.

Patients are asked to bring a business card as evidence of employment. For those without funds, ten dollars are loaned for lunches, stationery, etc., to be repaid out of wages. Patients are also expected to contribute a reasonable sum for their room and meals. Explanations of the scheme have been given to all 3 shifts of nursing staff to avoid misunderstandings. Early breakfasts are arranged where needed, and evening interviews given to follow progress and discuss problems.

The advantages of this scheme are that patients can be observed while actually in the work situation, obtain the support and encouragement of the nursing staff, physicians, and other patients, thus having a large audience before whom they are motivated to succeed. Initiative and resourcefulness are stimulated. Working patients are encouraged to find their own accommodations where possible. They are able to accumulate a small sum of reserve money. It is believed that the time spent in the hospital is reduced in the long run. The patient does not have to wait for social service to find both job and living quarters. As a corollary, the nurses are able to give more time to the remaining patients.

We feel that this scheme offers some socially handicapped patients the chance to work and to discuss with the psychiatrist problems arising from their graduated return to daily life. We hope that the improved atmosphere in the ward due to the 'working patients' will assist us in starting a sheltered workshop, where less well patients may be trained in good work habits against the time of their eventual discharge.

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CASE REPORTS

FATAL AGRANULOCYTOSIS DUE TO TRIFLUUPROMAZINE HYDROCHLORIDE¹

FRANK J. AYD, JR., M.D.²

The list of pharmaceutical agents which produce agranulocytosis has expanded since the introduction of the phenothiazine derivatives as tranquilizers. To this list can be added trifluupromazine hydrochloride, designated chemically 10-(3 dimethylaminopropyl)-2 trifluoromethyl phenothiazine hydrochloride, since a case of fatal agranulocytosis has resulted from its administration.

CASE REPORT

This patient, a 52-year-old white woman, had a chronic schizophrenic psychosis, paranoid type. In May 1956 she was started on perphenazine 20 mg. daily. This dosage was reduced gradually to 5 mg. a day. After 243 days of treatment perphenazine was discontinued because of an apparently satisfactory symptomatic remission. A total of 2,889 mg. of perphenazine had been taken by this patient. Prior to, during, and at the conclusion of perphenazine therapy the white blood cell count and differential were within the range of normal variation.

Sixty-one days later this patient relapsed. She was started on trifluupromazine hydrochloride 100 mg. four times a day. After 7 weeks the dosage was lowered to 100 mg. twice daily. On the 8th treatment day, by which time the patient had taken 22,800 mg. trifluupromazine hydrochloride, she complained of excessive fatigue, drowsiness, fever, and sore throat. On examination her temperature was 102 degrees and a peritonsillar abscess was discovered. An immediate white blood count disclosed 700 white cells, all lymphocytes. Antibiotic and steroid therapy was started immediately. The peritonsillar abscess gradually enlarged necessitating incision and drainage to relieve the resulting respiratory obstruction. In spite of intensive medical treatment, death occurred 5 days after the agranu-

locytosis was detected. Permission for post-mortem examination was refused.

Prior to the institution of trifluupromazine hydrochloride therapy, this patient's routine blood picture was normal. After the onset of the agranulocytosis her daily white blood count varied from 700 to 1500 WMC's with 0 to 2 granular cells.

COMMENT

On the basis of its chemical structure, trifluupromazine hydrochloride belongs to the "chlorpromazine model" group described by Freyhan⁽¹⁾. The phenothiazine derivatives that have caused agranulocytosis to date all belong to the "chlorpromazine model" group having in common 3 carbons in a straight chain. Mepazine, which does not have a side chain with 3 carbons, is the only exception. Phenothiazine derivatives which have Piperazine radicals at the end of the 3 carbon straight chain have not caused agranulocytosis. This patient took in 243 days 2,889 mg. of perphenazine which has a Piperazine radical at the end of the 3 carbon straight chain without any adverse effect on her hematopoietic system. However, when treated with trifluupromazine hydrochloride which belongs to the "chlorpromazine model" group and does not have a Piperazine radical attached to the 3 carbon straight chain, she developed a fatal agranulocytosis. Time will tell if this is a significant clinical observation.

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¹ The trifluupromazine hydrochloride received by this patient was furnished by The Upjohn Company, although it now is marketed by E. R. Squibb and Sons under the trade name, Vesprin.

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MARSILID IN CATATONIC SCHIZOPHRENIA

CARL BREITNER, M.D.¹

Since the introduction of tranquilizing medication in psychiatry, many problems concerning hyperactive mental patients have been reduced or solved. The use of tranquilizing drugs has not been recommended for the hypoactive or depressed patient.

Recently, Iproniazid² has been recommended for the purpose of stimulating such patients. Numerous reports on the effects and side effects of this drug are already available. They indicate that Iproniazid inhibits monoamine oxidase, thereby slowing down the inactivation of tissue formed serotonin. All reports are agreed that the drug produces euphoria and increased appetite in proper dosages. A number of reports indicate that its psychiatric use has been successful in depressions (1, 2, 3, 4).

This preliminary report is designed to direct the attention toward an extended use of Marsilid, namely, for the treatment of schizophrenic patients of the stuporous catatonic type. In this study, Marsilid was first tried on some catatonic patients who previously had not or only temporarily responded to ECT. Some of these patients had been in the Arizona State Hospital for several years and had been continuous feeding problems. Most of them had responded temporarily to ECT but stopped eating and returned to muteness, usually within a week or so, when ECT was discontinued. Some of these catatonic patients responded to Marsilid alone and some to Marsilid in combination with ECT. Improvement was frequently noted within a period of days and maintained on gradually reduced doses of Marsilid. It is considered significant that since this drug has been in use at this institution, not a single patient has required tube feeding.

The preferred dosage has been 50 mg. t.i.d., accompanied by Pyridoxine 10 mg. daily. The dosage was reduced if the patient showed excessive hyperactivity or other side effects.

¹ Arizona State Hospital, Phoenix, Ariz.

² Marsilid, brand of Iproniazid Phosphate, Roche.

CASE HISTORIES

A 27-year-old Negro woman committed to the hospital on 12-28-56 diagnosed schizophrenic reaction, catatonic type. She was a deportee from the Metropolitan State Hospital in California where she had been admitted in October 1956 as withdrawn, hallucinating and not eating.

After admission here, she had several courses of ECT to which she responded with marked improvement, but on each occasion relapsed within a few days after ECT was discontinued. As usual the main difficulty was the feeding problem and complete muteness.

The patient was then started on Marsilid 50 mg. t.i.d., to which she responded quickly. She started eating, became a good worker, was cheerful and pleasant. Medication was reduced to 50 mg. of Marsilid daily. The patient was discharged on 10-19-57.

A 42-year-old single Negro female, admitted to this hospital on 9-12-57 diagnosed schizophrenic reaction, catatonic type.

On admission, she was brought in on a stretcher, mute and negativistic, stared at the ceiling and would not respond to questions. She improved after one course of ECT temporarily, but relapsed after one week and again became mute with occasional posturing. Tranquillizing medication did not change the picture. However, she continued to respond to ECT temporarily. She was then placed on Marsilid and is now showing marked improvement. She is friendly and co-operative, helpful on the ward, cheerful and responsive.

These and similar experiences seem to indicate that Marsilid is of value in the treatment of catatonic schizophrenia. At this time, no attempt is made to conclude from the limited material available in what percentage of cases favorable results may be expected.

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SEVERE ANGIONEUROTIC EDEMA DURING CHLORPROMAZINE THERAPY

FREDERICK R. HINE, M.D.¹

The edema occasionally reported as a side-effect of chlorpromazine therapy is of a mild or transient and non-specific type. However Cronqvist, *et al.* (1), have described two cases of acute angioneurotic edema in patients under treatment with chlorpromazine, one of whom experienced some respiratory distress. The present report describes a single case of severe angioneurotic edema occurring during chlorpromazine administration and responding to antihistamine and ACTH therapy.

The patient, a 34-year-old white female, had been psychotic for 9 years, with a diagnosis of schizophrenia. On July 22, 1957, chlorpromazine was prescribed for the first time at a dose of 50 mg. t.i.d., increased to 150 mg. t.i.d. on July 26 and continued at that level until the onset of toxic symptoms. During this treatment the patient became slightly more attentive and responsive to the ward personnel and was not assaultive. Routine blood counts were within normal limits throughout the period described by this report. She was not receiving medication other than chlorpromazine.

On August 13, a slight puffiness of the lips was noticed. By the following day moderate edema of lips, cheeks and eyelids was readily apparent. Chlorpromazine was discontinued and the patient was placed on Benadryl 50 mg. q 4 h by mouth. By the evening of that day, August 14, she was in considerable discomfort with edema involving the entire face. Epinephrine 1:1000 was administered in two one-half cc. doses at an interval of two hours without improvement. The patient was restless during the night but her

vital signs remained normal and no further emergency treatment was given.

On the morning of August 15, the patient was found to be in great distress. The severe facial edema had caused extrusion of the contents of the sebaceous glands. The patient's eyes were completely obscured and the tongue and mucous membranes of the mouth seemed distinctly swollen. She could swallow small amounts of liquids. The degree of "general toxicity" was shown by the fact that this patient, in contrast with her customary severe restlessness, now remained almost immobile in bed. Her temperature was slightly elevated to 100.0° (R); physical examination was otherwise normal. Benadryl was increased to 100 mg. q 4 h and 40 units HP ACTH gel was given intramuscularly in a single dose. The patient remained at bed rest and in considerable discomfort for the remainder of the day with a temperature up to 102.2° (R). During the afternoon she developed a generalized erythematous, maculopapular rash.

By the following day, August 16, the edema had subsided slightly. The patient's eyes were visible; she was able to swallow somewhat more freely and was afebrile. The rash persisted. She again received 40 units of HP ACTH gel intramuscularly and Benadryl 100 mg. by mouth q 4 h. This regime was continued over the next two weeks and during this time the patient's edema gradually subsided as did the rash. In about 10 days she had returned to her physically healthy, though psychotic, state.

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¹ Director of Research and Training, Southeast Louisiana Hospital, Maudville, La.

PRELIMINARY REPORTS

THE USE OF NUCLEIC ACID IN AGED PATIENTS WITH MEMORY IMPAIRMENT

D. EWEN CAMERON, M.D.¹

During the past two years studies on the effects of the nucleic acids (deoxyribonucleic and ribonucleic acids) have been carried out upon 23 aged patients suffering from impairment of the retention phase of memory. These investigations are part of a long-continued search for agents capable of modifying this memory impairment.

Weiss (1955), in summarizing his work upon the neuron, pointed out that this structure is constantly renewing itself. The material essential for its continued activity is produced at its nucleated end and is passed up towards its end plates. He refers to the reports of Hyden *et al* (1950) who deduced a high rate of protein synthesis in the cell from the elevated nucleic acid concentration in and around the nucleus, and to the findings of Samuels (1951) and others that labelled phosphoprotein seems to shift peripherally in nerves.

Numerous studies have shown that nucleic acid and protein metabolism are intimately related and, in particular, that the synthesis of ribonucleic acid is closely linked to protein synthesis. It has also been shown that an increase in the ribonucleic acid in the cell leads to an increase in protein, and that the ribonucleic acid increase relative to protein precedes protein synthesis.

We therefore started to explore the use of nucleic acids in aged patients in whom there was an impairment in the retention phase of memory.

Procedure: In January 1956 we commenced the use of deoxyribonucleic acid (DNA) given intravenously in association with intrathecal hyaluronidase. We combined these substances in an attempt to get DNA into intimate contact with the brain. DNA was selected since it is found almost exclusively in the nucleus. With encouraging preliminary results we later began the

use of ribonucleic acid (RNA) because of its apparent closer relationship to protein synthesis.

Both DNA and RNA were put up in a 10% solution;² saline was added to bring the injection up to 10%; the intravenous injection was done slowly. The initial dose varied from 100 to 500 mgms, depending upon the patient's condition. Up to 4 gms of DNA, and up to 2 gms of RNA, were given daily intravenously.

In the last year we have been exploring the use of RNA, orally in capsules, the maximum amount being 75 gms daily. The average amount is considerably lower, ranging from 10 to 20 gms.

The results were assessed on the basis of : a counting test; clinical assessment; assessment by relatives; assessment by the social service department. The patients are kept on prolonged follow-up for continued study.

Results: In all 23 patients favorable results were noted. In 50% the results were good. The best results were obtained in patients having severe memory deficits and marked confusion. In most of these the confusion cleared up, orientation returned and there was considerable or complete restoration of retention. Results were usually noted after 4 or 5 daily injections. Continued injections after 2 weeks usually were not necessary. Where improvement of the memory deficit was partial, further administration of the nucleic acids, no matter how long continued, did not bring about full restoration. Intravenous injection was the preferred route; oral administration gave limited results.

Side Effects: Side effects such as temperature rise and occasional pain at the site of injection were noted following intravenous injection, and gastrointestinal disturbances after oral doses in a few cases.

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THE USE OF RITALIN¹ INTRAVENOUSLY AS A DIAGNOSTIC ADJUVANT IN PSYCHIATRY

HERBERT FREED, M. D.²

Following the observation that some patients who received Ritalin^r orally seemed to verbalize more freely and even show some push of speech, a pilot study was made to note if such an effect was elicited with the intravenous administration of Ritalin.

A preparation of lyophilized Ritalin (Methyl-phenidylacetate hydrochloride) in a concentration of 10 mgm. of Ritalin per cubic centimeter was administered to a series of more than 20 patients in both private office practice and in a private sanatorium, Roseneath Farms. The response to doses of 10 to 15 mgm. in 14 of 20 cases was significant in that there was increased verbalization. In 5 of these cases, this could be classified as a "push of speech." One patient, G.L., a 54-year-old female revealed hitherto repressed material, not obtained before when the combination of sodium amytal and methamphetamine was administered. The patient could not explain why she had not revealed this censored material before except that her affective state seemed different on this last occasion. It has been our custom to use the combination of sodium amytal 0.25 grams and 20 mgm. of methamphetamine well diluted and administered intravenously to elicit repressed psychic content and to further abreactive responses in selected cases (1, 2). In this clinical note on the use of Ritalin intravenously, the opportunity is taken to contrast the responses of these two agents. The simultaneous use of sodium amytal with the Ritalin was not feasible because of chemical incompatibility. When sodium amytal was

administered intravenously immediately after the Ritalin injection the Ritalin effect was tempered.

These are the tentative observations: 1. The Ritalin preparation elicits a response which is usually less laden with affect, i.e., the abreaction is less intense. The affective coloring is not as likely to be euphoric and is often tinged with more hostility. This may be manifested wholly by crying with little verbalization. In 2 cases the hostility was evidenced by a complete withdrawal, characterized as passive aggression, which was transient. 2. Because the abreactive response was not as "depleting of affect" or as sustained with the Ritalin, the patient was easier to manage in the office interview. 3. The Ritalin preparation also does not produce insomnia in the post-treatment period as frequently as the methamphetamine-sodium amytal mixture does. 4. Side effects observed after Ritalin in 3 patients were post-injection headache and a feeling of chest constriction with palpitation in 2 cases, both transitory.

Inasmuch as the alteration of mood states and the manipulation of affects is increasingly important in all forms of psychotherapy, we are continuing this study in the use of Ritalin intravenously as a mood alterative and a diagnostic adjunct in psychiatry. Insight into the differences in responses with similar agents can further our knowledge of psychodynamics as well as psychopharmacology.

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¹ The Ritalin used in this investigation was kindly supplied by James G. Smith of the Ciba Pharmaceutical Products, Inc., Summit, N. J.

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ELECTROENCEPHALOGRAPHIC CHANGES IN CHRONIC SCHIZOPHRENICS UNDER CHEMOTHERAPY

MAX A. BRUCK, M. D., PH. D.¹

The Veterans Administration Chemotherapy Project (908 schizophrenics) made a separate EEG study on the 16 participating patients of the VA Hospital, Canandaigua, N. Y., possible. The patients received daily doses of either Thorazine 400 mg., phenobarbital 200 mg., promazine 400 mg. or placebo, each drug incorporated in the same type of tablet. The study was undertaken as a double blind test by a psychiatric team. The investigator added EEG tests for the 16 participating patients.

The effects of Thorazine on the EEG were studied before by several investigators (2, 3, 6, 8). Some of them noted changes, others did not. The contradictory results were probably due to the different methods of investigation. We concentrated on the alpha rhythm, a component of the normal EEG.

According to the experience that the alpha rhythm (frequencies from 8 to 12 cps. in our study) is best delineated in the occipital leads (1), we studied the tracings from the left occipital lead, connected with combined electrodes from both ear leads. As described before (7), the relative amount of alpha was determined by passing a map measure along the base line of all the alpha waves during 30 seconds. A ratio was calculated by dividing the absolute time of alpha by the total time, (artefactual parts in the record excluded). Blood glucose levels were not determined because of normal eating habits of the patients, no clinical signs of hypoglycemia and early recording after eating. The alpha ratios immediately before starting chemotherapy and 6 weeks later were measured.

The average alpha ratios (in thousands) of the patients on Phenobarbital increased 122.25, on promazine 34.25, on placebo 8.75,

on Thorazine 160.75. Although the increase in the Thorazine group appears to be significant at the 1% point, a variance analysis (5) shows that the difference between the drug groups is not significant: the variation between and within subjects is so high that the increase of the alpha rhythm in the Thorazine group could be due to chance. Our value for F is 1.77. But this would have to be at least 3.49 to denote significance at the 5% point.

The result does not mean that the increase of the alpha ratio in our Thorazine group is definitely due to chance. It is also possible that the increase is real, but our series too small to give a statistically completely significant information. This study, therefore, despite the striking increase of the alpha ratio in the Thorazine group is only preliminary and calls for an investigation on a larger series. An electronic analyzer would be helpful in such a research.

We are indebted to Dr. Fred Heilizer for his helpful advice in selecting the proper method of variance analysis.

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¹ VA Hospital, Canandaigua, N. Y.

CORRESPONDENCE

FREUD AND LAY PSYCHOANALYSIS

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: May I make reference to Dr. Eliasberg's letter on "Freud and Lay Psychoanalysis," published in the December 1957, issue of *The American Journal of Psychiatry*. One does not have to wait for Ernest Jones' third volume of Freud's biography in order to quote Freud on the problem of lay analysis, Freud's references to this question are numerous; just to cite one example—in Freud's *Collected Works*, Vol. XIV, pp. 289, 293, and 295 (German Edition) where Freud said in his epilogue to his monograph, *Lay Analysis*, "I have, of course, assumed that psychoanalysis is no specialty of medicine. I can't see how anyone can refuse to recognize this fact. Psychoanalysis is part of psychology, and not of medicine . . ." (1927).

That's why Freud did not wish to have psychoanalysis become the "handmaiden" of psychiatry. I can well understand that Dr. Eliasberg does not wish to adopt everything that Freud has taught. But to submit, as Dr. Eliasberg intends to, that Freud did not know what he was talking about and, above all, to say that Kant (who lived a century before Freud) had "answered" Freud, is another matter with which few analytically oriented psychiatrists may agree. Incidentally, Dr. Eliasberg's quotation of the Latin phrase, *quod licet Iovi non licet bovi*, does not seem to me applicable here, as "Jupiter" Freud, indeed, did "license" the "oxens" to practice analysis, as Dr. Eliasberg himself complained!

Last, but not least, the question arises, why Freud took the stand on lay analysis, which Dr. Eliasberg, *et al.*, criticize repeatedly. The answer can, in my opinion, be found in the origin of psychoanalysis: the *social sciences*. Ernest Jones' chapter on "Sociology" in his third volume seems to me an

excellent summary in this respect, although Jones, too, seems to be loath to give full credit to the ancestors of Freudian psychology: the German sociologists Georg Simmel and Leopold von Wiese (the latter in his famous *Beziehungslehre*), the French Le Bon, and the English MacDougall, to name but a few. Freud was aware of his godfathers, and stated so repeatedly. It is, perhaps, one of the unfortunate mishaps in medical history that the discoverer of psychoanalysis was a physician and, therefore, his students' claim of Freud's *Lehre* as a medical science: psychoanalysis is not a "science" and it is not a branch of medicine.

But because psychoanalysis is not a "science," Freud never entertained the idea that his *Lehre* was "complete" or "immutable," as Dr. Eliasberg interprets him; on the contrary! A *finished* product would run counter to the dynamic content of human beings, psyche and soma, which we call Life, and Freud was the first one to realize the ongoing and perpetual development of his thoughts and ideas, even after his death. . . . Therefore, it seems to me that Freud was, contrary to Dr. Eliasberg's opinion, "aware for what lay analysis was heading."

In summing up, it seems to me that we should approach the controversy of lay analysis on a more positive, *i.e.*, factual and scientific, level, perhaps more toward the point of view which Ernest Jones has taken, although the latter does not appear to be entirely free from ambivalent feelings towards lay analysis himself. Above all, I feel that one who considers himself a psychoanalyst or a student of Freud ought to embrace the master's *Lehre, as is*. Should any differences arise, they ought to be examined in the light of objective research and with the earnest attempt to search for the truth.

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REPLY TO THE FOREGOING

Editor, THE AMERICAN JOURNAL OF PSYCHIATRY:

SIR: I agree with Hans Illing's last words about the earnest attempt to search for truth.

I do not see how this tallies with what he says a few lines above about embracing the master's *Lehre, as is*. Illing seems to cling

to the *verba magistri* and the *verba magistrorum magistri*. I can only hope that Dr. Illing will not dispute the right of anyone trained in psychoanalysis to say: *Hier irrite Freud.*

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THE NATURE OF MAN

A man's nature is best perceived in privateness, for there is no affectation; in passion, for that putteth a man out of his precepts; and in a new case or experiment, for there custom leaveth him. . . . A man's nature runs either to herbs or weeds; therefore let him seasonably water the one, and destroy the other.

—FRANCIS BACON

A man resorts to dialectics only when he has no other means to hand. People know that they excite suspicion with it and that it is not very convincing. . . . It can be only the last defence of those who have no other weapon. . . . Reynard the Fox was a dialectician: what?—and was Socrates one also?

—NIETSCHE

SELF DISCIPLINE

Mistakes, misunderstandings, obstructions, which come in vexatious opposition to one's views, are always to be taken for just what they are—namely, natural phenomena of life, which represent one of its sides, and that the shady one. In overcoming them with dignity, your mind has to exercise, to train, to enlighten itself; and your character to gain force, endurance, and the necessary hardness. . . . Never to relax in putting your magnanimity to the proof; never to relax in logical separation of what is great and essential from what is trivial and of no moment; never to relax in keeping yourself up to a high standard—in the determination, daily renewed, to be consistent, patient, courageous.

—BARON STOCKMAR TO PRINCE ALBERT
(in Lytton Strachey: Queen Victoria)

COMMENT

THE CART BEFORE THE HORSE

It would be difficult, if at all possible, to dissociate one's assessment of current developments and trends from the orientation, hopes, and apprehensions of him who does the assessing. Even professional historians, having the same neatly packaged sets of data at their disposal, have been known to differ, sometimes quite substantially, in their appraisal of causes, meanings, and effects of epoch-making events. It will hardly be gainsaid that the personal slant of the commentator is a major factor in his evaluations.

With the premise, therefore, that this, as any other, comment derives from a subjective attitude which has undoubtedly colored the writer's perspective, let it be said that American psychiatry today is going through a period of wholesome restiveness. Sincere self-searching within the ranks has become a refreshing—and refreshingly widespread—phenomenon. This applies to fundamental formulations and to their bearing on everyday practice. The trend has been evident in a number of statements made recently by some of the foremost thinkers among our colleagues and has found eloquent expression in two conferences held under the auspices of the Committee on Public Health of the New York Academy of Medicine, the transactions of which have been edited ably last year by H. D. Kruse (Hoeber-Harper).

Among the various areas which have come in for an overhauling, the concept and application of psychotherapy have been subjected to a constructively critical review.

Around the turn of the century, a wholesome departure from the preoccupation with symptom combinations and disease entities had introduced an emphasis on sick individuals rather than on their sickness. Paradoxically, this led in many quarters immediately away from the individual patients' specific peculiarities to a search for a cause responsible for all mental illness. The hope was that, once you had discovered a common etiologic denominator, you could work out a common therapeutic procedure held in readiness for all comers. Sanguine scampering for "the" cause resulted in a number of shouts of Eureka. Focal infection, so some proclaimed, was at the bottom of all psychopathology; you treated the patient by pulling teeth, removing tonsils, appendices, and gall-bladders, and resecting parts of the large intestines. Others announced that the "glands of destiny, regulating personality" were the source of all deviant behavior; your job was to administer the right kind of hormone. There were other such claims, put forth with less fanfare perhaps, but with a great deal of conviction. The patient himself was bypassed on the route to surgery, endocrinology, "neurologizing tautology" (as Adolf Meyer called it), etc.

A much broader view gave rise to ingenious theories about factors influencing the development of personality and modes of treatment intended to do something about those factors. Psychotherapy came into its own. The patient became a participating, experiencing, communicating person given an opportunity to lay bare his conflicts and to modify his behavior. It would seem that the stage was thus set for a truly individualized adaptation of therapy to the unique, unduplicated needs of each patient. But somehow this desire was sidetracked by many in favor of an effort to work out a uniform method, a rule of conduct for the therapist who then should proceed according to precisely prescribed specifications. The training of young psychiatrists assumed, under the circumstances, the character of an exercise in imparting the niceties of an "approach." There is in psychiatry, burdened as it is with a huge and ever increasing vocabulary, hardly a worse misnomer than the term "approach." We do not approach a patient one way or another; it is he who approaches us with a quest for help.

This preoccupation with rigidly established procedure has tended to shove aside an important consideration which, as elsewhere in medicine, is a prerequisite for effective treat-

ment. Detailed knowledge of the method has much too often taken precedence over diagnosis, that is, detailed knowledge of the patient subjected to the method. The therapeutic cart is put before the diagnostic horse, with complacent reliance on the method decided on *a priori*.

It is this complacency which has recently received a major jolt. More and more voices are speaking out against the smugness which derives from a curiosity-stifling belief in what Adolf Meyer referred to as "exclusive salvationism" via an obsessively preordained mode of procedure. There is a growing demand for an integration of the existing "approaches." There is a cry for a flexible adaptation of the therapeutic goal to the specific physical, situational, and emotional needs of each patient on the basis of a thorough diagnostic study. There is, as a result, more elbow room for therapeutic experimentation

and an honest willingness to submit the results to unbiased evaluation. Adolf Meyer's advocacy of "pluralism" and "relativism," lost for a time in the shuffle of doctrinaire decks, is being revived. The diagnostic horse is being put back in its legitimate place before the therapeutic cart.

The restiveness in present-day American psychiatry is a healthy phenomenon and holds great promise for its immediate future. It augurs well for the practice and teaching of a kind of psychotherapy which, based on proper concern for diagnostic issues, will subordinate procedure to patient, set realistic goals, and in each instance reflect not only on what is to be done in terms of a fixed method but also on such important questions as for whom and for what the treatment is intended.

L. K.

THE "READER OF A PAPER" AND THE "LISTENER": SOME HERETIC THOUGHTS

"Listening to papers" is one of the many trials and tribulations of a psychiatrist—by far not the least; and the pages of professional magazines are customarily reserved for the very same people who "read papers." Psychiatric papers are probably not too different from those read at meetings of other branches of medicine—"only more so." Time and again I have sworn to myself never to attend another meeting or convention and never to listen to another paper—ever! But I end up like the man who stated: "To stop smoking is the easiest thing in the world—I have done it hundreds of times." And so, sooner or later, I find myself at the receiving end of a "paper" which is being read.

I always enjoy listening to a man who has something to say. But if a speaker has something to say—why does he not just go ahead and say it—why has he "to read a paper"? Psychiatrists who habitually inquire into the "why?" of human behavior seem to shun inquiries into the motivation of "paper-reading"—a rather amazing fact if one considers the usual intensity of their professional curiosity.

"Speaking" is one thing, "reading a paper" is something else. The former has its place as a valuable experience in interpersonal relationship; the latter is a rather irrational act, considering that the listeners are most likely all able to read themselves quite well, illiteracy being rare among psychiatrists. If the "reader of a paper" had the voice and the skill of a Charles Laughton, listening might be pleasurable. More likely, however, the reading is a stammering, fumbling or monotonous production of complicated sentences, constructed for careful reading in one's own studio, but not intelligible at the high speed at which they are thrown at us at the meetings. There is no regard for the fact that there exists a considerable difference between the spoken language, adapted to oral communication, and the written language, fit only for slow and careful reading. It is odd that this difference should be neglected by the very profession which has made interpersonal communication one of its main subjects of study.

A few papers are rich in value—most of them are not. I have listened to many

papers of considerable length, the pertinent content of which could have been summarized in a few sentences.

Other papers are constructed according to the time honored principle: "If you want to tell them something, first tell them what you are going to tell them—then tell them; then tell them what you have told them!" Still others leave us with the strong impression that the speaker had "to give a paper" for some reason or other, so that the reading of the paper is an end in itself and no longer serving any other purpose.

How then, may we ask, are papers selected for presentation? Most of us come to conventions trusting that the program committee has carefully considered the submitted papers and selected the cream of the crop. Have they really? Is it possible that the name and reputation of the author or of the institution from which the paper originates may sometimes be the decisive factor?

What does the listener get out of his attendance? A short while ago I attended a lecture given for explicitly stated didactic purposes, to teach techniques in group therapy. After the lecture one of my co-listeners, duly impressed by the famous name of the speaker, felt moved to give vent to his admiration of the performance. Since I myself felt disappointed I raised the question "what, if anything, did we learn from this didactic lecture?" Only then did several others of our group dare to show their own disappointment, similar to my own. Only then did one after the other object, that we had heard nothing but well known generalisations. The eulogist withdrew behind the statement, that he had enjoyed the strong feeling: "Here is a man who is a master of a difficult technique!" I felt like the Shah of Persia when he refused the Kaiser's invitation to a horse race: "I am

fully aware" he said, "that some horses run faster than others; and which one runs fastest does not interest me." I felt I did not have to come from far away to convince myself that some men master a technique well—I was aware of that fact. I came to learn.

Rarely do we meet a speaker who "speaks." If that happens it is an enjoyable experience—provided he has something to say. Even if he occasionally should get mixed up in his syntactical constructions, if he has occasionally to stop and think for a moment, or to check his short notes before going on, even if he has sometimes difficulty to find the right word, I still prefer him a thousand times to the reader of a smooth paper; and so I think would most of us. For spoken language is the natural mean of oral communication, as written language is designed to be read. Thoughts that a man can express in free speech can usually be understood by attentive listening; papers sometimes remain obscure even when one reads them slowly.

Why then are such "speakers" so rare? It seems that few men can handle their anxiety in facing an audience and that a rigidly fixed and prepared manuscript is their only defense, inefficient as it may be. If the speaker is a capable man and has something to say (and only such men should occupy the platform), then such behavior is certainly neurotic. One might then recommend that the speaker take his own medicine.

There is no doubt a corner in Heaven reserved for us, the listeners, a corner where no papers are allowed to be read. For the good Lord must love us—(to paraphrase Abraham Lincoln's famous *bon mot*)—as he has created so many of us.

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NEWS AND NOTES

BOARD OF SCIENTIFIC COUNSELLORS FOR N.I.M.H.—A 6-member panel of non-government experts will provide consultation to the National Institute of Mental Health on the mental health research program conducted in laboratories and other facilities at the National Institutes of Health, Bethesda, Md., and at field stations.

Membership of the new panel, known as the Board of Scientific Counsellors of the National Institute of Mental Health, is apportioned selectively between clinical and fundamental science categories to maintain balanced perspective.

It is expected that in addition to their review of the Institute's scientific activities, the new counselling body will provide the Director of the Institute with objective viewpoints and guidelines on the long-range perspective of intramural research.

Membership on the Board is for a term of 4 years. However, for the purpose of establishing a rotation of tenure, the terms of the initial appointees, which commenced July 1, 1957, will expire at staggered intervals. The names, professional affiliations, and terms of the Board members are as follows: Chairman, Dr. Horace W. Magoun, Professor of Anatomy, University of California Medical Center (June 30, 1960); Dr. John Benjamin, Child Research Council, University of Colorado (June 30, 1960); Dr. Stanley Cobb, Bullard Professor Emeritus of Neuropathology, School of Medicine, Harvard University (June 30, 1959); Dr. Jordi Folch-Pi, Director of Scientific Research, McLean Hospital, Waverley, Mass. (June 30, 1959); Dr. Robert F. Bales, Associate Professor of Social Relations, Harvard University (June 30, 1961); and Dr. Neal E. Miller, Angell Professor of Psychology, Yale Institute of Human Relations (June 30, 1961).

DR. RAGAN HEADS DEPT. OF PSYCHIATRY, UNIV. OF FLORIDA.—Dr. Peter F. Ragan, III, assistant professor of psychiatry at Cornell University Medical College and assistant attending psychiatrist at New York

Hospital, has been appointed chairman of the department of psychiatry in the University of Florida's J. Hillis Miller Health Center by the State Board of Control. The appointment became effective Feb. 1.

SCHOOL FOR MENTALLY RETARDED, WEST SENECA, N. Y.—The plan for a new school for the mentally retarded at West Seneca, N. Y., has been announced jointly by Commissioner Paul H. Hoch, and John W. Johnson, Superintendent of Public Works. A psychiatric hospital for mentally ill children will also be constructed on the site, which comprises approximately 500 acres. Cost of the project is estimated at 50 million dollars.

The new school will serve the counties of Erie, Niagara, Orleans, Genesee, Wyoming, Allegany, Cattaraugus, and Chautauqua. Patients from those counties are now being received at Newark State School, Newark, N. Y. Mentally retarded persons of all ages will be accepted for care, training, and treatment at the school.

Designed for 2,400 patients, the institution will be provided with service facilities for future expansion, if necessary, to accommodate 3,000. It will be constructed on a modified cottage plan and will be equipped with full hospital, treatment, training, and rehabilitation facilities.

DR. JOHN F. STOUFFER RETIRES.—Dr. John F. Stouffer, chief of the neuropsychiatric department at Philadelphia General Hospital for 34 years, retired on February 1, 1958. Public officials, prominent members of the medical profession and representatives of various civic organizations honored him at a banquet at the Penn Sherwood Hotel, January 30, where Dr. Robert Matthews, Pennsylvania Commissioner of Mental Health, acted as toastmaster, and Dr. Francis J. Braceland, past president of the A.P.A. and psychiatrist-in-chief at the Institute of Living in Hartford, Conn., was principal speaker.

Dr. Stouffer was named chief of the psychiatric department in 1925, when the staff

consisted of a part-time secretary and 8 part-time physicians. Today the 268 bed unit has a medical staff of 18 full-time and 43 part-time psychiatrists. During his years as chief, more than 90,000 patients have been admitted to the institution.

NATIONAL INSTITUTE ON CRIME AND DELINQUENCY.—The 1958 meetings of the National Institute will be held in the newly completed Deauville Hotel, Miami Beach, Fla., May 18-21, 1958.

Plans for the Institute include over 20 separate workshops for discussion of specific aspects related to courts, pre-sentence reporting, probation, parole, detention home management, the role of citizens' groups, as well as the many other related aspects of the correctional cycle.

For further information write: Raymond B. Marsh, general chairman, Tallahassee, Fla.

MORRIS KLAPPER NEW N.A.M.H. ASSISTANT PROGRAM DIRECTOR.—Morris Klapper, M. A., has been appointed assistant executive director in charge of program for the National Association for Mental Health.

For the past 13 years Mr. Klapper has been involved in various phases of social work in the areas of administration, community organization and program, his most recent position being that of executive director of United Cerebral Palsy of New York City.

AUSTRIAN MEDICAL SOCIETY OF PSYCHOTHERAPY.—The 8th annual meeting of the Austrian Medical Society of Psychotherapy was held January 28, 1958, at the Polyclinic of Vienna. The following officers were elected: president, Prof. Viktor E. Frankl, M. D., Ph. D.; vice-president, Dozent Karl Nowotny, M. D.; councilors, Profs. Otto Poetzl, Hans Hoff, and Erwin Stransky.

Frederick Hacker, M. D., chief of staff, Hacker Clinic, Beverly Hills, Cal., read a paper on "Ego Psychology."

FOURTH INTERNATIONAL CONGRESS OF PSYCHOTHERAPY.—The 4th International Congress of Psychotherapy will be held September 1-7, 1958, in Barcelona, and is or-

ganized by the Sociedad Española de Medicina Psicosomatica y Psicoterapia.

The main theme of the congress will be "Psychotherapy and Existential Analysis," with a study of the psychotherapeutic possibilities of the existential concept. The symposia and group meetings will cover such varied aspects of psychotherapy as: Influence of Oriental Psychology on Present Psychotherapy; Psychodrama; Group and Child Psychotherapy; Hypnosis; Psychotherapy and Religion. The reports of the plenary sessions will be simultaneously translated into Spanish, English, French and German.

For details of registration, remittance and accommodation, write: Dr. Ramon Sarro, president, Casanova, 143, Barcelona, Spain.

RORSCHACH SEMINARS, UNIV. OF CHICAGO.—Two workshop seminars in Rorschach testing will be held during July 1958, at the Univ. of Chicago as follows:

1. *The Foundations.* Technique of administering demonstrated. Processing the responses into the scorings. Psychologic significance of the separate test variables, and their interrelations in shaping the whole personality. July 7-11, 1958.

2. *Advanced Clinical Interpretation.* Some typical diagnostic problems in the psychiatric clinic. Children and adults, varying in degrees and kinds of disorder. The test's solutions, and its indications for treatment, both as to amount and goals. July 14-14, 1958.

Dr. S. J. Beck will conduct both seminars. For information write: Rorschach Workshops, Department of Psychology, University of Chicago, Chicago 37, Ill.

NORTH PACIFIC SOCIETY OF NEUROLOGY AND PSYCHIATRY.—The annual convention of the North Pacific Society of Neurology and Psychiatry will be held April 11-12, 1958, at the Empress Hotel, Victoria, B. C. Guest speakers will be Dr. Augustus S. Rose, professor of neurology, University of California School of Medicine, Los Angeles, and Dr. Brock Chisholm, president, World's Federation for Mental Health and former director of the World Health Organization.

For further information address Robert M. Rankin, M. D., secretary-treasurer, 1621 South West 152nd St., Seattle 66, Wash.

TRAINING FELLOWSHIP, NEW YORK CITY.—New York University-Bellevue Medical Center is offering a 3-months training fellowship with stipend in neuroanatomy and neurophysiology, beginning September 1958.

For further information apply to: Dr. Louis Hausman, Department of Anatomy, New York University-Bellevue Medical Center, 550 First Avenue, New York 16, N. Y.

VIRGINIA BEYER MEMORIAL LECTURE.—The Department of Psychology, Springfield (Maryland) State Hospital, announces that the Virginia Beyer Memorial Lecturer for 1958 will be Morris S. Schwartz, Ph. D. His subject is: "The Mental Hospital—Institution in Transition." The lecture will take place on April 25. The Springfield Hospital Women's Auxiliary is sponsoring the lecture and there will be no registration fee.

For further information write: Dr. Michael H. P. Finn, Springfield State Hospital, Sykesville, Md.

MEDICAL EDUCATION WEEK.—Medical Education Week will be observed again, for the third successive year, April 20-26. The general objectives are to develop public understanding of the progress, aims and problems of medical education with the hope of stimulating its more adequate financial support by the public.

Emphasis will be centered on the challenges and problems confronting medical education in the dynamic current setting, together with the continuing need for facilities, personnel and financing essential to the further pursuit and application of medical knowledge, if medicine is to continue to make maximum contributions toward full utilization of the nation's health resources.

TREATMENT OF MENTALLY ILL IN GENERAL HOSPITALS.—Dr. Charles K. Bush is quoted in the Bulletin of the Connecticut State Department of Mental Health, January 1958, to the effect that since the end of World War II the number of general hos-

pitals offering inpatient treatment of the mentally ill has increased by 68%.

Dr. Bush added that of the 584 general hospitals which now admit mental patients, 223 report that they place them in regular medical or surgical wards. At the end of World War II there were 176 general hospitals that admitted mental patients.

A number of hospitals reported that they could use "many more" beds for psychiatric cases and a few said that their psychiatric units were not paying their way because of insufficient patients.

The average length of stay for mental patients in general hospitals ranged from 20 to 30 days. The majority of hospitals reporting said daily costs were between \$15 and \$22, but some were as high as \$45.

DR. REISS APPOINTED DIRECTOR OF RESEARCH AT WILLOWBROOK STATE SCHOOL, STATEN ISLAND.—Dr. Paul H. Hoch, Commissioner of Mental Hygiene, has announced the appointment of Dr. Max Reiss of Great Britain as director of research at Willowbrook State School, Staten Island.

Dr. Reiss will organize and direct a new unit to conduct research in mental retardation, combining the techniques of clinical psychiatry, biochemistry and endocrinology. The unit will be made up of scientists from several disciplines.

A noted psycho-endocrinologist, Dr. Reiss has been active in research work for the past 18 years. He is a fellow of the Royal Society of Medicine; vice-president and founding member of the Psycho-Endocrine Association; a founding member of the Society for Endocrinology; and a member of the Royal Medico-Psychological Association, the Biochemical Society, British Medical Association, and Society for Experimental Biology.

EASTERN GROUP PSYCHOTHERAPY SOCIETY.—The final meeting in the series dealing with sources of conflict in contemporary group psychotherapy will be held by the Eastern Group Psychotherapy Society on Friday, April 18, at 8:30 p. m., at the New York Academy of Science, 2 East 63rd Street, N. Y. C.

Conflict around the place of psychoanalysis in the group will be discussed by Milton M. Berger, M. D.; that around the concept of group dynamics will be presented by Emanuel K. Schwartz, Ph. D.; Asya Kadis will speak on the alternate meeting; and William Furst, M. D., will compare homogeneous and heterogeneous groups. The meeting is open to the professional public.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.—It is the intention of the American Board of Psychiatry and Neurology, Inc. to undertake Special Foreign Certification of physicians who are not residents of the United States or Canada, not holding licensure for the practice of medicine in those countries and not contemplating medical practice in those countries, by a certifying examination after completion of prescribed requirements. For details and regulations, write to the Secretary-Treasurer, American Board of Psychiatry and Neurology, Inc., 102-110 Second Avenue, S. W., Rochester, Minn.

ERNEST JONES.—The death of Ernest Jones on February 11 removes the last of the original members of Freud's inner circle, and the world's most prominent exponent of psychoanalysis. He was in his eightieth year.

Only last year he completed his monumental biography of Freud. Particularly striking was the fact that in the third volume he could describe so realistically the progress of the disease in Freud's last days, himself suffering from the same malady as that which took the life of the man to whom he had given such devoted service.

A more extended memorial of Ernest Jones will appear in a later issue of this JOURNAL.

FIFTH INTERNATIONAL CONGRESS OF INTERNAL MEDICINE.—The world's largest international gathering of scientists and clinicians concerned with internal medicine will take place in Philadelphia on April 24-26 at the Fifth International Congress of Internal Medicine. Dr. T. Grier Miller, Philadelphia, the Congress President, reports that in addition to America's leading internists, 81 foreign speakers representing 27 other nations will participate in the Congress' scientific program. Among these will be leading physicians from the Soviet Union, Czechoslovakia, Hungary, Rumania, and Poland. In announcing their participation, Dr. Miller said, "We are particularly pleased at the acceptance by these physicians of our invitation to join us at this International Congress. Their participation emphasizes that medical science knows no geographical or political barriers. It also represents immediate voluntary and professional implementation of President Eisenhower's invitation given in his recent State of the Union Message to the Soviet Union to join with us in cooperative medical research for the betterment of the health of mankind throughout the world." The speakers from the Soviet Union will deal particularly with cardiovascular disease.

The scientific program will feature a number of panels and symposia, dealing with anticoagulant therapy, cardiac diseases, vascular diseases, hematology, the medical aspects of cancer, synthetic steroid compounds used in rheumatoid arthritis, gastroenterology, endocrinology and diabetes, cardio-vascular surgery, current management of tuberculosis and rehabilitation.

There will also be special lectures by world-renowned speakers.

For further information write Mr. E. R. Loveland, Secretary-General, Fifth International Congress of Internal Medicine, 4200 Pine St., Philadelphia 4, Pa.

BOOK REVIEWS

THE NEUROLOGIC AND PSYCHIATRIC ASPECTS OF THE DISORDERS OF AGING. Proceedings of the Association for Research in Nervous and Mental Disease, Vol. XXXV, 1955. Edited by Joseph Earle Moore, M.D., H. Houston Merritt, M.D., and Rollo J. Masselink, M.D. (Baltimore: Williams & Wilkins Co., 1956, pp. 307, 79 Ill., 17 Tables. \$8.50.)

The scientific advances of the past half century have resulted in a substantial addition to the average life span. Accordingly, there has been a corresponding increase in the proportion of the population over 65. With this growing aging population long term disorders, especially those classed as degeneration in origin, have taken on an added significance. For these are the major diseases of old age. Furthermore, the most dramatic and catastrophic episodes result from tissue collapse involving chiefly the vascular and nervous systems.

The current volume is a verbatim record of deliberations of 25 top ranking authorities as they critically analyzed the present concepts of the neurologic and psychiatric aspects of the disorders of aging.

The reader will find here the views of Lansing on the "Biology of Aging of Cells." Paul Weiss describes "The Life History of the Neuron."

Detailed comments on "Brain Metabolism" and "Blood Flow" by Harold E. Himwich, Williamina A. Himwich, and Seymour Kety offer recent experimental data of basic importance.

In the carefully documented report by Joseph M. Foley, "Hypertensive and Arteriosclerotic Vascular Disease of the Brain in the Elderly," sharp issue is taken with the current interest in "little strokes." According to Foley, the practice of explaining a number of obscure clinical problems, such as a drop in blood pressure or a confusional episode or a gradual dementia as the result of a "little stroke," is a grave disservice for the patient. In truth, "little stroke" is a symptom and appears when a patient has had a lacunar infarct.

Warren Andrew presents a chapter on "Structural Alterations with Aging in the Nervous System." Evidence of nerve cell degeneration and the tendency to repair is presented together with a number of excellent photographs. It should be added that some difference of opinion appears in the discussion of the significance of the morphological changes within the cells as interpreted by Andrew.

Contributions by I. Lorge, Clive McCay and Malamud with those of MacDonald Critchley and Howard Rusk add to the value of this report.

The final chapter is a panel discussion on "The Physician's Contribution to the Role of Older Persons in Society" with D. Ewen Cameron as chairman, and several top ranking authorities who discuss particular phases of the place and influence

of older people in society, and how the elderly may be guided by understanding physicians.

The comments by J. S. Tyhurst and D. S. Sargent on "Retirement" are especially illuminating.

The careful reading of the small volume is a rewarding task. It is highly recommended.

EDWARD L. BORTZ, M.D.,
Philadelphia, Pa.

TREATMENT OF HEART DISEASE: A CLINICAL PHYSIOLOGIC APPROACH. By Harry Gross and Abraham Jezer. (Philadelphia & London: W. B. Saunders Company, 1956.)

It was difficult to review this excellent book. Everytime it was shown to a doctor he wanted to borrow it for a "few days" (which meant a few weeks). This occurred and with good reason three or four times.

As the title indicates, this book deals with much more than treatment. It includes physiology, symptoms, and diagnosis as well, all in an understandable language with absolute lack of padding. It is perhaps equally suited to general practitioners and specialists. If anything it favours the general practitioner.

The first chapter is on physiology. It discusses the various methods of measuring cardiac output, very briefly and clearly gives the author's opinion of each method. This principle is followed throughout the book. This chapter does not go into the causes of hypertrophy and dilatation. It deals only with the points that bear on failure. The discussion on forward vs backward failure is interesting but complicated showing that neither is 100% true. Physiology reappears all through the book.

The discussion on digitalis is full but concise. It occupies a whole chapter as does quinidine.

The fourth chapter, 38 pages, deals with the "arrhythmias." The treatment of paroxysmal tachycardia occupies over 9 pages. It is detailed and tells the various successive measures to take, followed by a summary. The summary of the handling of a case of rapid arrhythmia is especially practical.

Every general practitioner should read the chapter on the treatment of congestive failure. The three important factors in the treatment are digitalis, salt restriction and mercurial diuretics, other measures are only of slight help.

There is a valuable chapter on diet, with many menus of various low salt diets with recipes. It suggests that salt restrictions are overdone in practice. The first sentence in the failure summary is, "A special diet is required by a small portion of cardiac subjects, a salt restricted diet for those in heart failure and an almost salt free diet for those with severe hypertension." With improvement it recommends increasing from 0.5 to 1 mg diet to a 2.5 one.

Failure to make this increase often results in inanition resembling cancer.

The chapter on hypertension recommends Apresoline and Rauwolfia as the safest combination of drug therapy, only however for selected cases. It concludes the summary of treatment by stating that "where there is no response to medical care, reassurance, rest, etc., diet (low sodium) and autonomic blocking agents may be prescribed with benefit."

Chapter 9 on hypertensive and arteriosclerotic heart disease is complete and detailed.

In the chapter on rheumatic fever, the authors do not express their opinion of the comparative value of salicylate and steroid therapy. The important indications for mitral commissurotomy are advancing disease with failure or near failure, evidences of high pulmonary pressure (haemoptysis, dyspnoea, acute pulmonary oedema, dilated pulmonary artery, etc.) as well as evidence of high pulmonary capillary pressure on catheterization which is recommended when the above evidences are absent or uncertain. The contraindications to operation mentioned are: (1) Well marked mitral insufficiency, (2) Large left ventricle, especially with mitral systolic murmur, (3) Aortic valve disease, (4) Active rheumatic infection, (5) Myocardial insufficiency, (6) Subacute bacterial endocarditis. The postoperative treatment is most detailed and comprehensive. Left pleural effusion is not mentioned.

It is a little disappointing that in the discussion on valvular disease there is no separate space given to iricuspid stenosis.

Modern laboratory methods (angiography, arteriography, (aorta and peripheral arteries) and cardiac catheterization are discussed and their diagnostic use evaluated, especially in congenital heart disease which is covered in a rational and lucid fashion.

The remainder of the book deals with heart disease in pregnancy, cardiac trauma, the heart in hypo- and hyperthyroidism, and beriberi, neuroses (effort syndrome) and various problems of rehabilitation.

This is a very satisfactory book on the treatment of heart disease and is to be highly recommended.

JOHN A. OILLE, M. D.,
Toronto, Ont.

PSYCHOPHARMACOLOGY. Edited by *Nathan S Kline*. (Washington D. C.: American Association for the Advancement of Science, Publication No. 42, 1956. \$3.50.)

This book, with a foreword by Winfred Overholser, consists of discussions of a number of studies of clinical effects of ataractic drugs together with a brief consideration of the action of certain psychotomimetic agents. Thus there are three papers on clinical applications of chlorpromazine—one by Lester Margolis, Ames Fischer, Robert N. Butler, and Alexander Simon, another by Vernon Kinross-Wright, and one by Anthony A. Sainz. Sainz also has a paper on considerations of the cerebral action of reserpine. Nathan Kline and A. E. Bennett report their respective therapeutic investigations

using reserpine. Leo Hollister, Leo Traub, and Wallace Bechman describe a study they made of the actions of reserpine and chlorpromazine using the technic of double-blind controlled studies, while Herman Denber and Sidney Merlis present investigations on antagonism between effects of mescaline and chlorpromazine. An interesting paper by Frederick H. Myers deals with the pharmacology of chlorpromazine, reserpine, and related drugs, and the volume is concluded with a chapter by Murray E. Jarvik on the mechanism of action of lysergic acid diethylamide, serotonin, and related compounds. Discussions follow each of the groups of papers. These have been edited in such a way as to reflect some of the lively impact of the symposium which was organized by the Medical Sciences Section of the American Association for the Advancement of Science and The American Psychiatric Association in 1954.

The work reported is therefore three years old and many rapid advances have taken place in psychopharmacology since. This is especially so in connection with mechanisms of action of drugs such as LSD and serotonin, about which a number of papers have appeared in the last two years. There have also been many further clinical reports of the action of reserpine, chlorpromazine, and other tranquilizers. In connection with studies in this volume, one is struck with the fact that most of them did not involve double-blind procedures but consisted of giving patients tranquilizing drugs and observing their behavior before, during, and after medication. One wishes for more adequate placebo controls and rating scale evaluations. Several of the papers suggest the view that apparently schizophrenia, even of long-standing, may be modified directly by the drugs aside from their action in decreasing anxiety and in making disturbed ward patients more manageable. The greater accessibility of patients to psychotherapy and other forms of treatment, following administration of chlorpromazine and reserpine, is the major contribution of these tranquilizers.

The volume is small and readable. It will also prove to be historically interesting since it contains articles by some of the early contributors to the field of psychopharmacology, a subject which seems destined to play a considerable role in psychiatric medicine in the coming years.

HUDSON HOAGLAND, PH. D.,
Worcester Foundation for
Experimental Biology,
Shrewsbury, Mass.

THE ANNUAL SURVEY OF PSYCHOANALYSIS. Vol. III.
Edited by John Frosch. (New York: International Universities Press, pp. 682. \$10.00.)

An annual survey must first be judged by the selection it makes. A close adherence to the original concepts evolved by Freud, the salient feature of the present volume, is discernable in the likemindedness of the authors and the homogeneity of the material covered.

However, psychoanalysis can no longer be identi-

fied with the writings of this one group of psychoanalysts regardless of its size. Other groups, building on Freud's fundamental discoveries, have continued empirical inquiry and the necessary reformulation of Freud's theories much the same way as Freud himself had continuously reformulated his own concepts. Which of these diverse developments will prove more scientific and fruitful remains to be seen.

Within the self-imposed but not stated limitations, however, the volume has been well prepared and presented. The topic divisions such as Critique and Methodology, Ego Psychology and Instinct Study, Clinical Studies, Psychoanalytic Therapy, etc. are well conceived, and the relationship of material in the various categories established without unnecessary overlapping.

The editors have presented not merely an abbreviation or synopsis of the original publications, but have mastered the contents and then reformulated them into a unified whole. The reader thus is able to get the feeling of the original article.

The book is free from obscurities; the style highly readable. Where different authors participate, they are not all even, but the general level of presentation is excellent. An excellent reference book, this volume fills the need for a digest of this particular segment of psychoanalytic literature.

HENRIETTE R. KLEIN, M. D.,
New York City.

CULTURE, PSYCHIATRY AND HUMAN VALUES: THE METHODS AND VALUES OF A SOCIAL PSYCHIATRY. By Marvin K. Opler. Foreword by Thomas A. Remond. (Springfield, Ill.: Charles C Thomas, 1956. 260 pp. \$6.00.)

This is a tightly-written study in which both its author and the social sciences can justly take pride. Combining rigorous scholarship and philosophical breadth, it integrates psychiatry and anthropology, taking the best from each and weaving them together into a theoretical framework of great strength and insight.

Dr. Opler has an extraordinary command of the literature; he is also experienced in the clinic and the field. This experience and understanding leaves him unsympathetic to exaggerated claims of the significance of "determinants" or to any other form of naive reductionism.

He rejects abstraction as impossible, for in his view elements are incapable of retaining their identity once removed from their fields: "the great danger . . . is to so abstract the individual from his meaningful cultural background that he ceases to be a responsive or live subject."

It follows that he also rejects polarity between personality and culture, and sees one simply as an aspect of the other: the forest is defined by its trees, and the tree can be understood only as a forest tree, defined by its place in the forest. Personality and culture therefore become merely different loci in one field where the observer himself, with his own background and interests, is also a factor. In this Opler resembles Sapir who wrote:

"These two poles of our interest in behavior do not necessarily make use of different materials; it is merely that the locus of reference is different."

In this system, in spite of "the fear, in social science and psychiatry, of dealing with values-systematizations, as if man were merely the prey of irrational and psychological forces," values are inescapable, and if we ban them at the front door, we admit them unavowedly and therefore uncritically at the back-door.

In the reviewer's opinion, the passages on cultural influences in psychosis are the weakest in this book, though this is no reflection on Dr. Opler, for available data are unsatisfactory. For example, *latah* exists, but field acquaintance with it reveals something far more variable and complex than published accounts suggest. Similarly, we know *windigo* not so much from Algonkian definition as from European definition, the two being different. As for *arctic hysteria*, I doubt that it has any existence apart from our literature. What we need is first-hand, detailed accounts of psychosis in preliterate societies—and soon, before these tribes are gone.

EDMUND CARPENTER, PH. D.,
Department of Anthropology,
University of Toronto

HALSTED OF JOHNS HOPKINS, THE MAN AND HIS MEN. By Samuel James Crowe, M. D. (Springfield, Ill.: Charles C Thomas; Oxford Eng.: Blackwell Scientific Publications Ltd.; Toronto: The Ryerson Press, 1957.)

William Stewart Halsted (1852-1922) was one of the "Four Doctors" who founded the Johns Hopkins Medical School that revolutionized medical education in America. This group—Welch, Osler, Halsted and Kelly—together with a number of hand-picked associates constituted an unrivaled galaxy of talented men who were responsible for the period that Flexner called the "Heroic Age of Medicine." It embraced the decades on either side of the turning from the 19th to the 20th century.

Dr. Crowe was a member of Halsted's staff from the time of his graduation in medicine in 1908, and had intimate knowledge of the men in the department of surgery that the Chief had built up. He was therefore eminently fitted to write not only about Halsted but also about the remarkable group that he surrounded himself with. The death of Dr. Crowe, who was professor emeritus of laryngology and otology, occurred only a fortnight after he had completed the manuscript of this book.

Having been a part of the Hopkins medical faculty throughout his professional career the author was able to draw on his personal knowledge for details, significant and often extraordinary, in the lives and work of his associates during those early pioneer days. His book makes fascinating reading.

The founding of the Johns Hopkins University, the Johns Hopkins Hospital and the School of Medicine was provided for by Mr. Johns Hopkins, a Baltimore merchant, in the will he signed in 1870.

Thus for the first time in America medical education became an integral part of a university program. The foresight of Mr. Hopkins in this planning is especially noteworthy.

When 29 years old Halsted, then on the staff of the College of P. and S. in New York after 2 years postgraduate study in Europe, performed what the author says was "probably the first successful direct blood transfusion in America." His sister was in a state of collapse from post-partum haemorrhage. Drawing blood from one of his own veins, he injected it into hers. "This was taking a great risk," he wrote in one of his letters, "but she was so nearly moribund that I ventured it, and with prompt results." His first gall-stone operation was done a year later. The case was that of his mother who was in a serious condition. After the consultants failed to take action, the youthful Halsted decided to act. He opened the pus-filled gall bladder and removed 7 stones. The patient recovered.

From his work in New York hospitals, Halsted was called to Baltimore to work in the pathological laboratory of William H. Welch, the first medical officer appointed to the Johns Hopkins Hospital and Medical School. In 1890 Halsted was made surgeon-in-chief to the hospital and in 1892 professor of surgery in the medical school. It was soon apparent that his extraordinarily meticulous technique was superior to anything hitherto witnessed in Baltimore.

Halsted knew how to pick his assistants, and, once appointed he left them pretty well on their own. John M. T. Finney, his earliest assistant, who became one of America's most eminent surgeons, reported that from his first day on duty until Halsted's death 33 years later the Chief never said a word to him about what he wanted him to do, or how he wanted it done.

Crowe reports that of the 238 surgeons trained by Halsted only 99 are in private practice, the remainder being in full-time university work.

When Harvey Cushing, a Harvard graduate in medicine, applied for a position on Halsted's staff in 1896, the Chief told him that if he cared for a place before autumn he could probably take him on, but thereafter only Hopkins graduates would be accepted. Cushing came, and Halsted had no reason to be sorry.

Early he began to select men on his staff to develop various sub-departments of surgery. Joseph C. Bloodgood was the first. To him Halsted assigned the task of a thorough and systematic study of all tissues removed at operation. Thus originated the specialty of surgical pathology. "Later in his apparently casual way Halsted steered Baetjer into roentgenology; Cushing and then Dandy into neurosurgery; Young into urology; Bear into orthopedics and Crowe [author of this book] into otolaryngology."

Three things in special are to be said about Halsted in relation to his men: 1. Like the sculptor who sees in the marble the figure that is to emerge under

his hand, Halsted's uncanny insight recognized among his juniors the men who would excel; 2. His marvellous technique and surgical example set for his assistants an exceptional pattern that they were bound to follow; 3. He rejoiced in their success and their eminence and paid full tribute to their achievements. For example, Hugh Young had become known for his skilful technique in perineal prostatectomy. Seeking Halsted's advice one day as to the advisability of operation in a case of cancer of the prostate, the Chief not only supported his proposal but served as Young's first assistant at the operation. At a national urological meeting, a New York doctor remarked, "The prostate makes most men old, but it made Hugh Young."

A major feature of surgical instruction at Hopkins was a course in experimental surgery on animals. Halsted initiated this course and gave it to the first class enrolled in their third year (1895). This experimental course was later turned over to Cushing who conducted it brilliantly. The example was soon followed in other medical schools. Dr. Crowe describes Cushing as "a perfectionist in every sense of the word—a true disciple of Halsted and a master technician." He was Cushing's resident for several years and found him, as did others who had worked with him, a hard task-master.

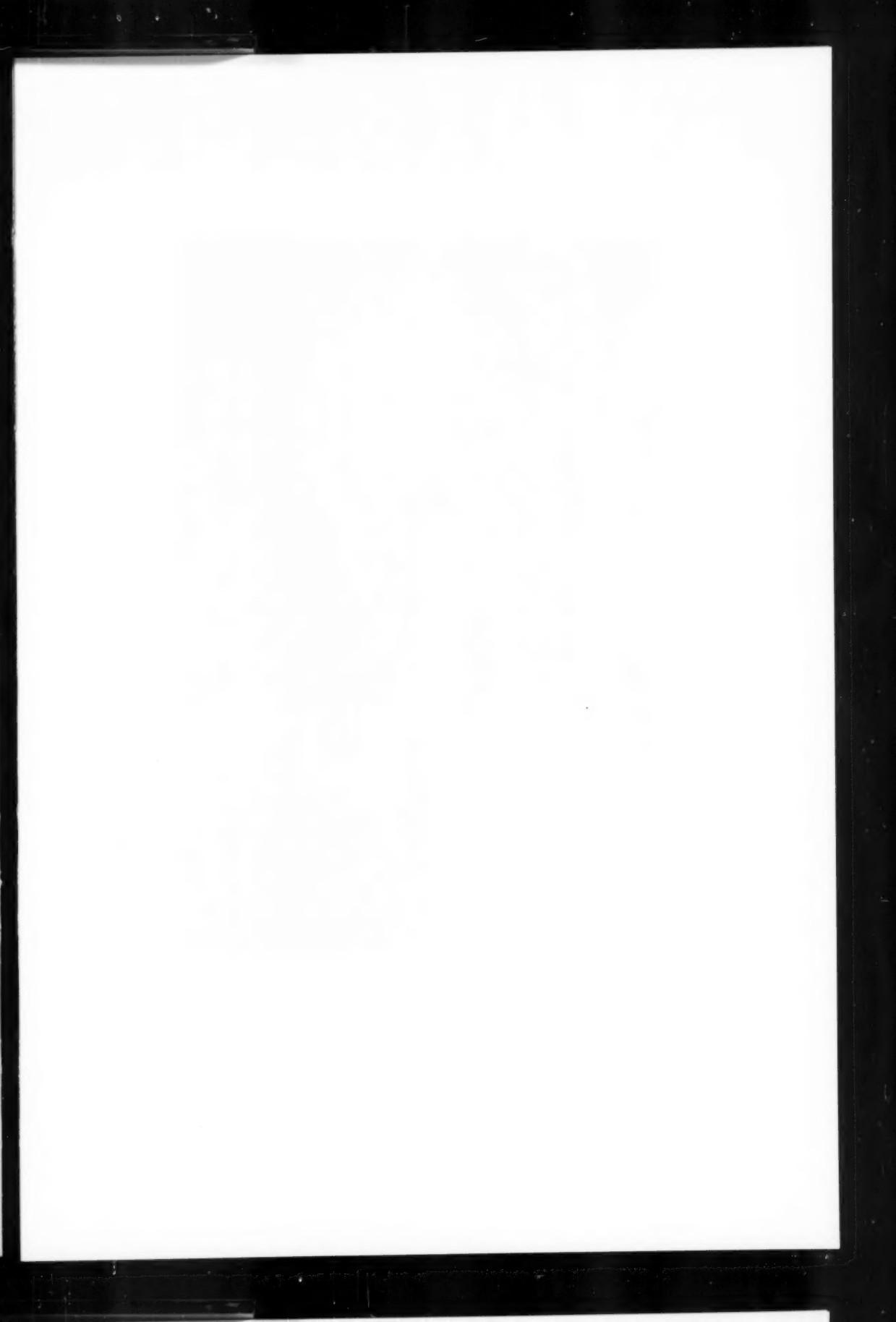
Chapters in this book are devoted to the various members of Halsted's staff. Special accounts are also provided of certain of Halsted's more important operative procedures.

The men whom he started on their careers reached the top of their new and specialized professions. Young is the father of urology as Cushing is the father of neurosurgery. Similarly, Baer pioneered in orthopedic surgery and Baetjer pioneered in radiology. That was in the early days when the dangers of exposure to X-rays were not understood. In consequence, Baetjer lost an eye and most of his fingers and developed malignancy of the axillary glands. He died at 59 a martyr to science.

An entertaining incident occurred at a Medical Board meeting (1912) when Halsted proposed combining laryngology and otology in one department under Samuel Crowe, a member of his staff but who was only 4 years out of medical school. Halsted had not consulted the senior men, who were doing the work in these two clinics. Howard Kelly was annoyed. He pounded the table in vigorous disapproval, whereupon Halsted began a profuse, slightly histrionic apology for his rash action. He kept on apologizing, but without withdrawing his recommendation, till Kelly again interrupted—"Halsted, stop it. I'll vote for it."

Alfred Blalock, who succeeded Halsted as professor of surgery and who had persuaded the author to write this absorbing story of the Heroic Age of Medicine at Johns Hopkins, writes the Preface, and to him Dr. Crowe wished to dedicate his book. It is illustrated.

C. B. F.





MELVIN M. JOHNSON

IN MEMORIAM

MELVIN MAYNARD JOHNSON, A. B., LL. D., 1871-1957

The death of Melvin Maynard Johnson on December 18, 1957, brought to a close the life of a great American. He was a born leader who dedicated his unusual talents to the promotion of human welfare. And his passing will be mourned most deeply by a million Scottish Rite Masons in North America and by thousands of psychiatrists and mental health workers in the United States and Canada.

Thanks to the vision and courage of Melvin Johnson, there was developed in 1934 a partnership between Scottish Rite Masonry and American psychiatry—a partnership that has made possible signal advances in our understanding of the nature of schizophrenia—and a partnership that promises to be still more fruitful in the years that lie ahead.

The story of this partnership is of interest to those of us who look to research to solve eventually many of the problems that confront us in psychiatry and in medicine generally. Briefly, this is the story.

In 1933, Melvin Johnson, a distinguished Boston lawyer became the Sovereign Grand Commander of the Scottish Rite Masons of the Northern Jurisdiction of the United States. Shortly after he assumed his new responsibilities, he made a study of the ways in which the benevolent funds of his Jurisdiction were being spent. This study revealed that worthwhile projects were being financed but that more could be done to promote human welfare if he could discover a major project that might be of significance to mankind throughout the world. In his search for such a project he consulted representatives of the National Committee for Mental Hygiene (now the National Association for Mental Health). He asked these representatives such questions as the following: "What is the greatest problem in your field?" The answer was dementia praecox. Then he asked "What is the degree of prevalence of dementia praecox?" The answer was to the effect that approximately 25% of all occupied hospital beds in North America were filled with individuals suffering from

this disability. Commander Johnson then asked the proportion of cases that got better. The answer was from 10 to 15%, or even less. Then he asked "What do we know about the intrinsic nature of dementia praecox?" The answer was "very little." He posed another question: "Is not dementia praecox a major field for research?" The answer was "yes, but that no disability in the entire field of medicine was more complex and that research to be effective must be of long duration and must entail investigative studies from many angles."

It is a measure of the stature of Melvin Johnson that the magnitude of the problem of dementia praecox and the difficulties involved in research whetted his appetite for action, and he made the following proposals: 1. that there be set up a Committee on Research in dementia praecox sponsored by The Supreme Council 33° Scottish Rite Northern Masonic Jurisdiction, U.S.A., under the auspices of the National Committee for Mental Hygiene; 2. that this Committee be composed of outstanding men representing psychiatry and allied disciplines, together with representatives from the Supreme Council 33° Scottish Rite Northern Masonic Jurisdiction; 3. that an able psychiatrist be appointed as field director on a part-time basis to travel throughout North America to discover promising research projects in suitable settings that needed additional funding and that might be considered by the Committee on Research in Dementia Praecox; 4. and that he (Melvin Johnson) would attempt to get the consent of his colleagues in the Supreme Council to vote annual grants to be expended by the Committee on Research in Dementia Praecox.

These proposals of Melvin Johnson were implemented within a matter of weeks. Dr. Arthur Ruggles became the first chairman of the Research Committee to be followed a number of years later by Dr. Winfred Overholser. The first field director was Dr. Nolan Lewis, and he was succeeded later by Dr. William Malamud.

It became the policy of the Committee to expend its resources in such a way that an impetus would be given to the funding of many promising projects with individual annual grants not to exceed from six to eight thousand dollars. Because of the intensive appraisal of each project, other donors were attracted to support the research undertakings that commended themselves to this Committee on Research in Dementia Praecox. In other words, the annual grants from Scottish Rite were essentially for pump priming—pump priming that has attracted many millions of dollars during the last 24 years.

At the present time, the Committee on Research in Dementia Praecox is funding 27 projects. Over the years, it has funded 62 projects, at a total cost of \$1,365,000.00. With the election of Judge George E. Bushnell in 1954 to succeed Melvin Johnson as Sovereign Grand Commander of the Northern Jurisdiction, the annual appropriation was augmented. In 1958, \$125,000 will be expended; and Judge Bushnell is securing the partnership of Scottish Rite Masons of the Southern Jurisdiction of the United States and of Canada as well—with a total membership of a million men in North America. These men, as they become more interested in research in schizophrenia are a great existing and potential force in forwarding progress in the whole field of mental health.

The Committee on Research in Dementia Praecox (now the Committee on Research in Schizophrenia) has discovered that there are tremendous advantages in having a Committee composed of both scientists and laymen. The laymen raise pertinent questions that keep the scientists on their toes in the appraisal of research projects. Melvin Johnson was right when he proposed a genuine partnership with Scottish Rite, rather than Scottish Rite merely granting funds for research.

The research funded by the Committee has centered largely on genetics, on child growth and development, and on the biological and psychological sciences as regard to the disease (schizophrenia) itself as it has already developed. Significant contributions have been made to the fundamental sciences

that have relevance, not only to schizophrenia, but to medicine generally. While the riddle of schizophrenia of course has not been solved, great forward steps have been made in regard to a better understanding of this condition, and promising leads for further research have been opened up. Unquestionably, the Committee has played a prominent role in fostering this progress.

At a recent meeting of the Committee, Melvin Johnson referred to his own contribution in these words—"I was building a foundation. I was not building the building itself and it is you, my successors, who are building the building and making the people conscious of what we are doing and how they should share."

This great American was born in Waltham, Mass., May 11, 1871, the son of Byron B. Johnson, the first mayor of the City of Waltham. He graduated in law from Boston University Law School in 1895. He became Professor at Boston University Law School in 1920-1935; Dean, 1935-1942; and Dean Emeritus, 1942. He was honored with the degree of LL.D. from the University of Vermont in 1936. He also received honorary degrees from Marietta College (Ohio) in 1941; Illinois Wesleyan University in 1949; Tufts College in 1949; and from Boston University. In addition, he was elected a Fellow of the American Academy of Arts and Sciences in 1938, and an Honorary Member of The American Psychiatric Association in 1940. Melvin Johnson was also a member of the Board of Directors of the National Association for Mental Health.

He died at his home in Boston, Mass., on Wednesday, December 18, 1957. He had been in failing health following a heart attack which hospitalized him in London, England, in late March as he and his wife were beginning a vacation in Europe.

The passing of Melvin Johnson is a reminder of what psychiatry owes to such laymen as Clifford Beers and himself. The work of both men lives after them. They built, not alone for today, but for future generations. The world is richer for their living.

CLARENCE M. HINCKS, M. D.,
Toronto, Canada.



"Anxiety, in one form or another,
is the most common symptom
confronting the practicing physician"¹

1. Hollister, L.H., et al.: Dis. Nerv. System 17:289
(Sept.) 1956.

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—BOOKS—



*How does social position affect treatment
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SOCIAL CLASS and MENTAL ILLNESS

*By August B. Hollingshead, Ph.D.,
and Fredrick C. Redlich, M.D.;
both of Yale University.*

A unique report based on 10 years of investigation into the relationship between social stratification and mental illness in the urbanized community of New Haven, Connecticut. The authors have found that a rather rigid five-tier class structure exists within their community, and that each class exhibits definite types of mental illness. Furthermore, each class reacts to the presence of mental illness in its members in different ways, and the treatment of psychiatric patients within the various classes differs accordingly.

The book describes in detail: social structure, psychiatric patients in treatment, the institutions and psychiatrists who treat them, and how social class affects both psychotherapists and patients. It also offers recommendations for improving socially determined shortcomings of psychiatric practice.

Get significant information on . . .

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- The tendency to use organic therapy (lobotomy, shock, etc.)
- The division of neuroses into seven types, and the percentages of patients by class for each type
- Who pays how much for what
- Two kinds of mobile neurotics—the climber and the strainer
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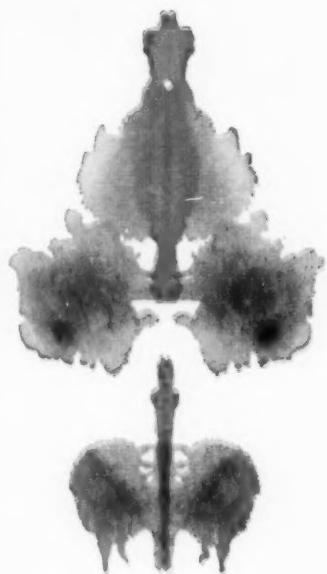
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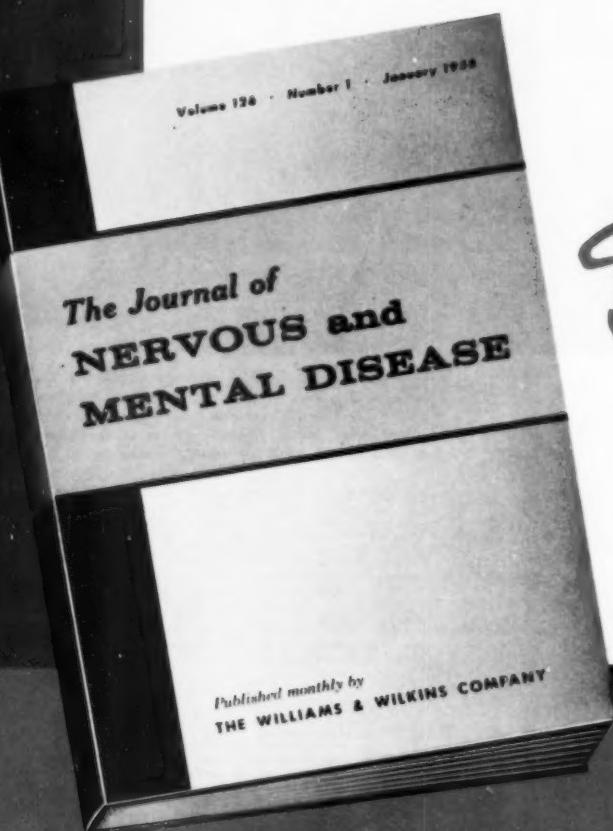
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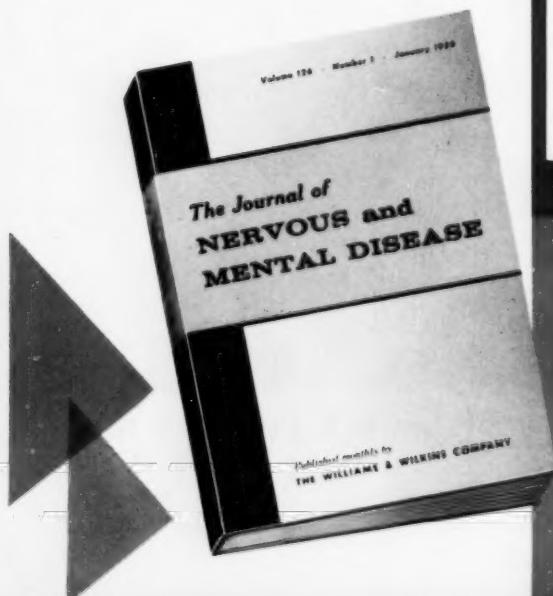
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Vol. 126,
No. 1

Aims and Scope

THE INTERDISCIPLINARY APPROACH

Editorial and Advisory



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By Hans Selye

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By Dr. Heinrich Waelsch

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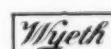
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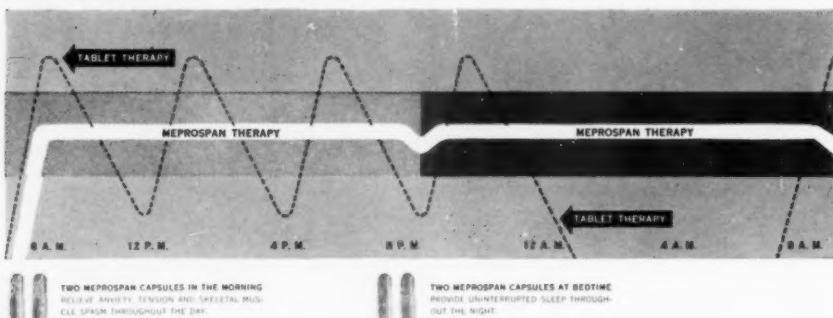
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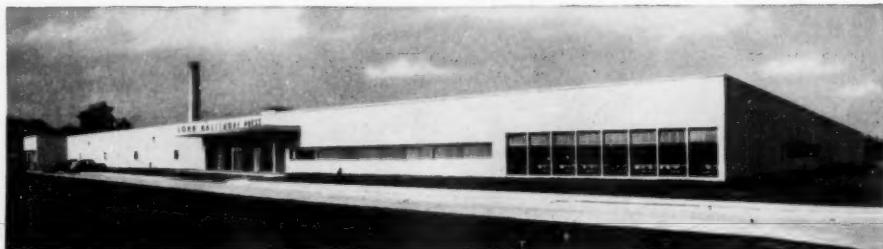
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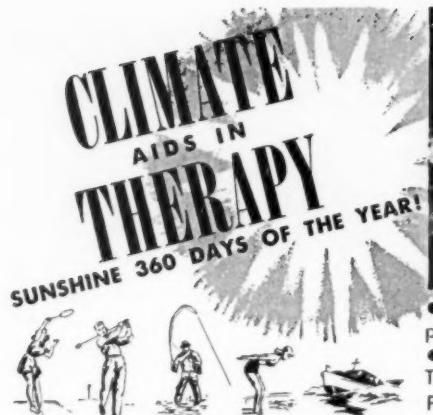
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